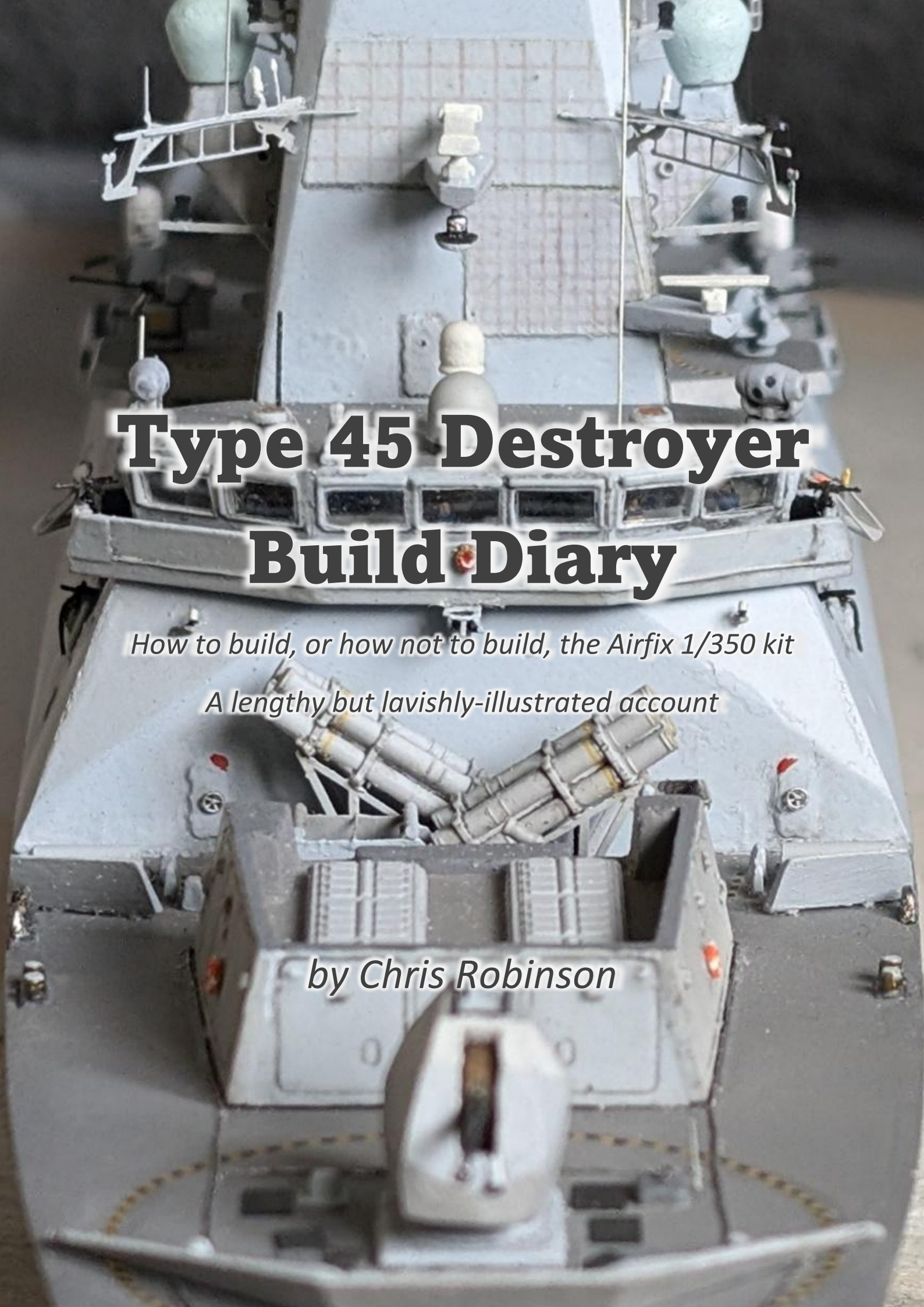

Type 45 Destroyer Build Diary

How to build, or how not to build, the Airfix 1/350 kit

A lengthy but lavishly-illustrated account

by Chris Robinson

Type 45 Destroyer Build Diary

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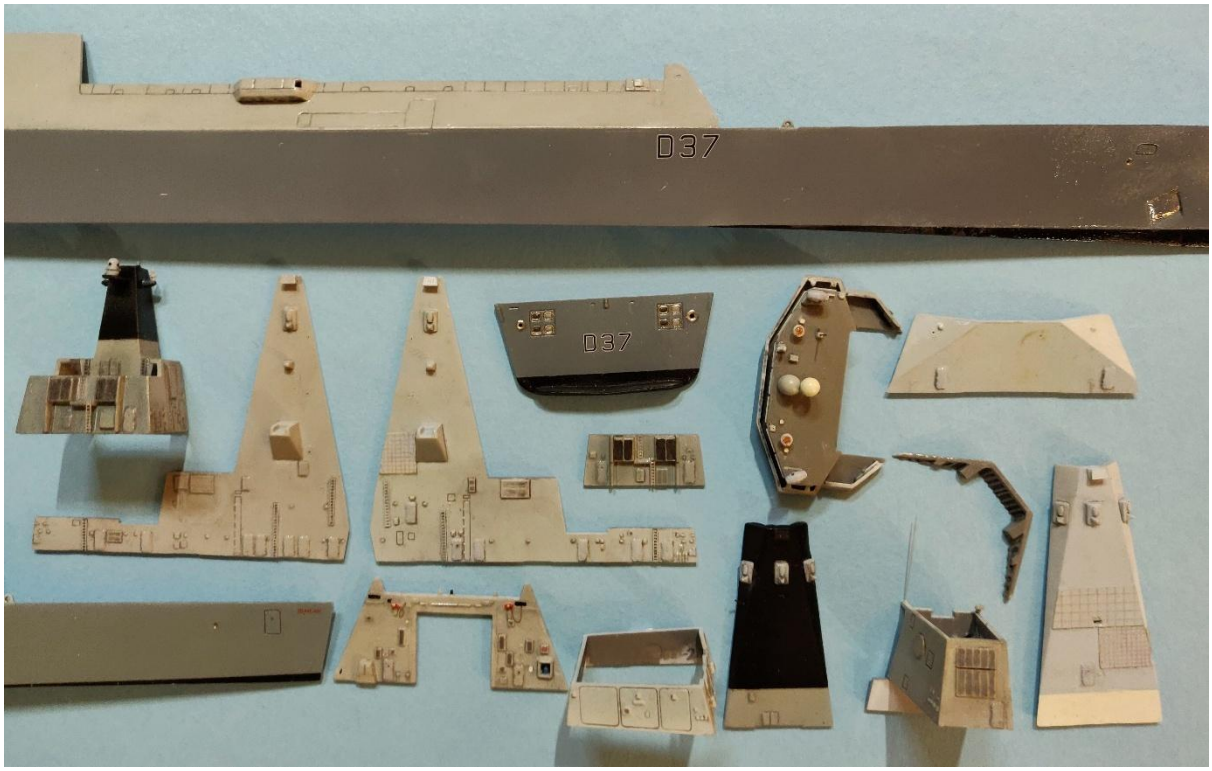
HMS Duncan

HMS Duncan entered service in 2013, last of the six Type 45 destroyers. Designed to counter air threats, the Type 45 is equipped with the Sea Viper air defence system, featuring Aster missiles and the distinctive Sampson radar. The system tracks and engages large numbers of fast-moving aircraft, drones and missiles. HMS Duncan is depicted during her long deployment in 2019 when she operated first in the Mediterranean, protecting a carrier conducting airstrikes on ISIS in Syria, then in the Black Sea, where she was challenged by Russian aircraft. She called at Odesa in Ukraine and was visited by President Zelenskyy. She was then diverted to the Persian Gulf to defend shipping against Iranian threats. HMS Duncan featured in two series of the TV documentary 'Warship: Life at Sea'.[1]



[1] This heading and text form the pull-out label on the port side of the model.

Type 45 Destroyer Build Diary

How to build, or how not to build, the Airfix 1/350 kit

by Chris Robinson

Objective

I was attracted to the Type 45 because I noticed the effect of light on its colour: the angular "stealth" facets reflect light in very different ways, so that in bright light, different parts of the ship appear different colours, from dark grey through light blue to almost white. From the start I set out to recreate that effect, painting facets in different shades to give the impression of the real thing, rather than reproducing the actual paint colour. In reality the ship is painted BS381c 676 Light Weatherwork Grey overall, except weather decks and interiors.

This was to be a waterline model, set in a Mediterranean seascape, probably with a water depth in resin. Having been captivated by the Channel 5 TV documentary *Warship: Life at Sea* (and having it for reference material), I decided to depict HMS Duncan as portrayed in the series, on one of its long deployments in 2017 and 2019. I chose 2019.

This was only my second serious model after a 40 year break, and my first ship, so I was still very much learning.

I bought the White Ensign photoetch set (PE35166)(though the Atlantic Models version is more up to date) and Atlantic Models 4.5" gun barrel.

I bought and read the Haynes Guide to the Type 45. It is useful but it has relatively few exterior pictures and their low resolution makes it hard to pick out details.

May 2022

Colour scheme

I worked out a colour scheme and tested it on paint mules (see also *Appendix 1 Colour scheme*).

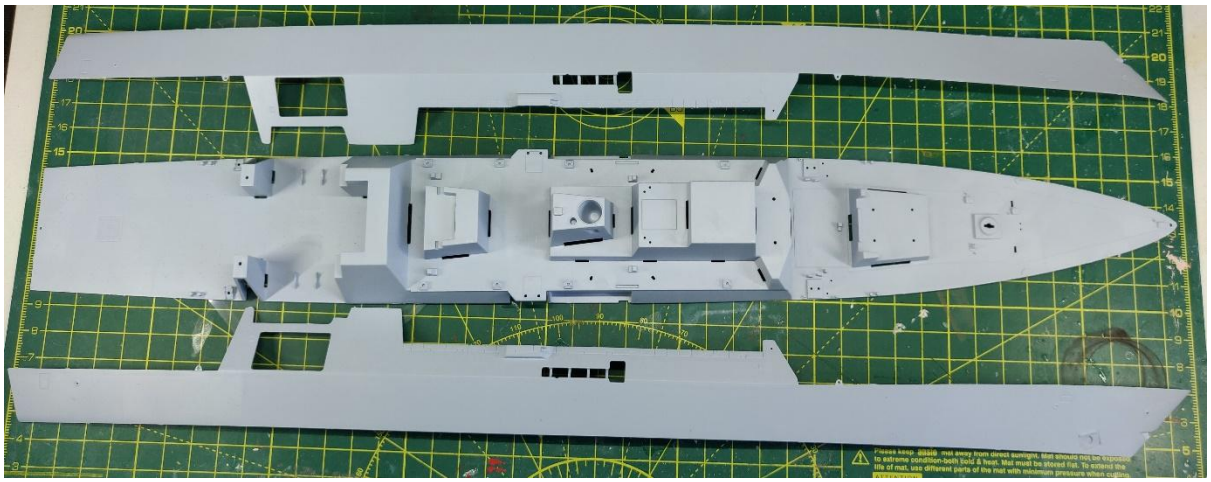
1
2
3
4
5
6
7
8
9
10
11
12
Wolf Grey
72.747
Pale Blue Grey
71.046
Sky Grey
71.407
Grey Blue
71.103
Medium Sea Grey
70.870
Silver Grey
71.401
Medium Grey
71.114
Ocean Grey
71.273
Sea Grey
71.049
50/50 1+2
50/50 1+3
2:1 1+3

2:1 White + Wolf Grey
UK Azur Blue
1:1 Medium G + UK Az. B.
Medium G
1:1 Sky G + Medium G
1:1 Sky G + Pale Blue G
Sky Grey
2:1 Sky G Wolf G
2:1 Wolf G Sky G
Wolf Grey
1:1 Wolf G + White

Initial painting and assembly

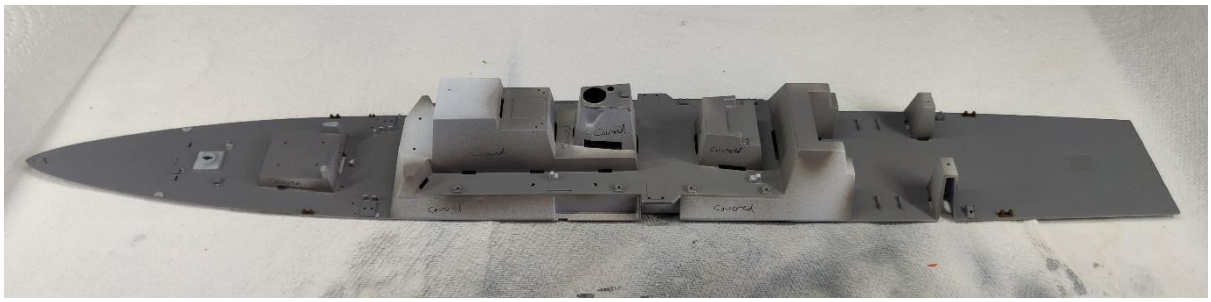
Washed the sprues. Fixed the doors over the stairway apertures in the hull and filled gaps.

Primed the parts on the sprues with Vallejo white surface primer (airbrush).



Test fitted & cleaned up main deck and hull parts.

Painted weather decks Medium Sea Grey.



June 2022

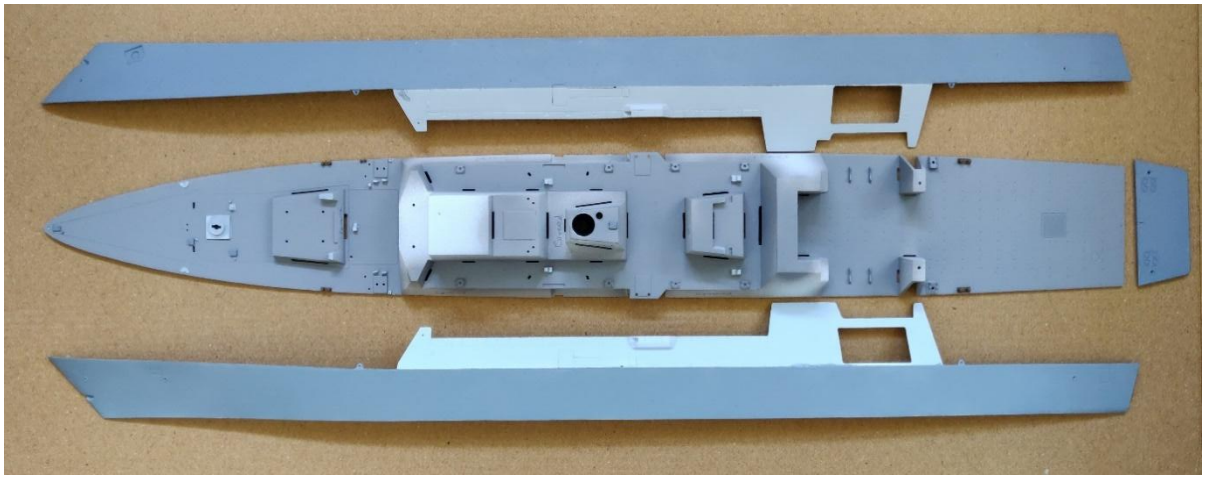
Painted moulded deck details in 0 and -2 colours.

Painted bollards in bronze (mix earth brown, natural steel & gold).

Painted inside funnels black, edged lightly in silver.

Considered opening mine observation hatch(es). Noted they are smaller than the outline on ship's side. Decided against, too fiddly for the minor benefit. Photos suggest they should be raised rather than recessed.

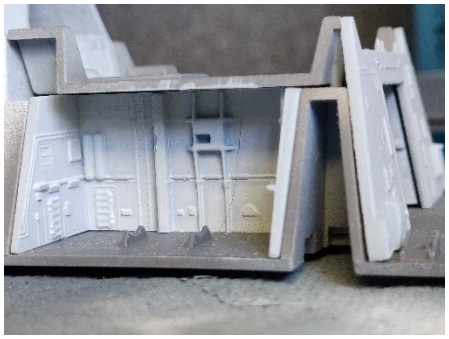
Sprayed upperworks on main side pieces – Wolf Grey port side, starboard 2:1 Sky Grey & Wolf Grey.



Masked upperworks and sprayed main hull sides and transom. Problems: an inaccuracy in the masked line, re-painted by brush; some bleed below masking tape; over-thinned paint and got puddling, requiring sanding back and re-spraying. Upperworks will also have to be re-sprayed or corrected by brush. Pleased with colour choices.

Painted deck hatches Ocean Grey per photos showing them darker and bluer than decks.

Sanded back sides as above and re-coated bare plastic and dark paint overspills with white Vallejo primer; also edges of bulwarks where sprayed dark grey, in anticipation of painting lighter colours later. Tried to overpaint light colours by brush but achieved unsatisfactory finish.



Cleaned up and dry fitted all the parts for the hangar and boat bay. As per the reviews, locating tabs were hopeless and had to be removed. Some seam lines. Had to sand about 0.5mm off the main hangar bulkheads to get everything fitting including roof flush to pillars.

Identified and cleaned up most of the superstructure parts and marked them on the back with part number and orientation on the model. Resprayed upperworks on main side pieces plus main superstructure pieces in Wolf Grey or Sky Grey per painting scheme.

Cut off fitting tabs on all above parts and dry-fitted.

Masked and resprayed hull sides and sprayed the full-hull transom.

Much research on the freeboard and the boot topping (black stripe on hull) (see measurement notes in *Appendix 4 - Boot topping measurement notes*). Held up kit parts against photos scaled on screen to same size. The boot topping should curve up at the bow, clipping the square cut-out for the anchor[2], and probably also at the stern. Concluded that the kit waterline cut-off is too high by 3mm at the bow, so does not have enough freeboard. The difference appears less at the stern, where the true waterline should be only 1mm lower. The boot topping should be about where the kit waterline is, but curving upward at the bow and possibly also at the stern. Decided I will need to build the full-hull version to get the extra freeboard. Will try to cut the bottom flat.

The anchor on the starboard bow seems to be well forward of where it should be, along with second-hawse-hole and the seamanship door near it, and it should be higher. The second hawse-hole should be about 5mm further back, level with the top of the breakwater. The anchor should be about 9mm further back and 4mm higher – vertically, it should be at, or just below, the middle of the freeboard. Too much trouble and risk to change it (but I did, see below).

Realised I have painted the boot topping too low at the bow, guided by the wrong position of the starboard anchor – I will have to repaint it. And will probably end up moving the anchor, hawse-hole and door!

The cut-out for the bow anchor is bit small and a bit low, but impossible to change. The hawse-hole above it is too low and too far aft on both sides.

Ordered North Star Models US aircraft carrier crew figures – nearest I could find, many with earphones.

Removed the kit posts beside hatches on the weather decks (4no) and replaced with 4mm lengths of wire, in the correct positions to hold the open hatch. These are to be painted the same colour as the hatch, Ocean Grey.

Touched up scratches to main deck paintwork.

[2] Later saw a review saying the anchor is in the wrong place on the Airfix kit. Agree.

July 2022

The hangar and boat bays

Noted that the hangar lacks detail such as the equipment lining the bulkheads. Decided to attempt a rough approximation using styrene sheet.

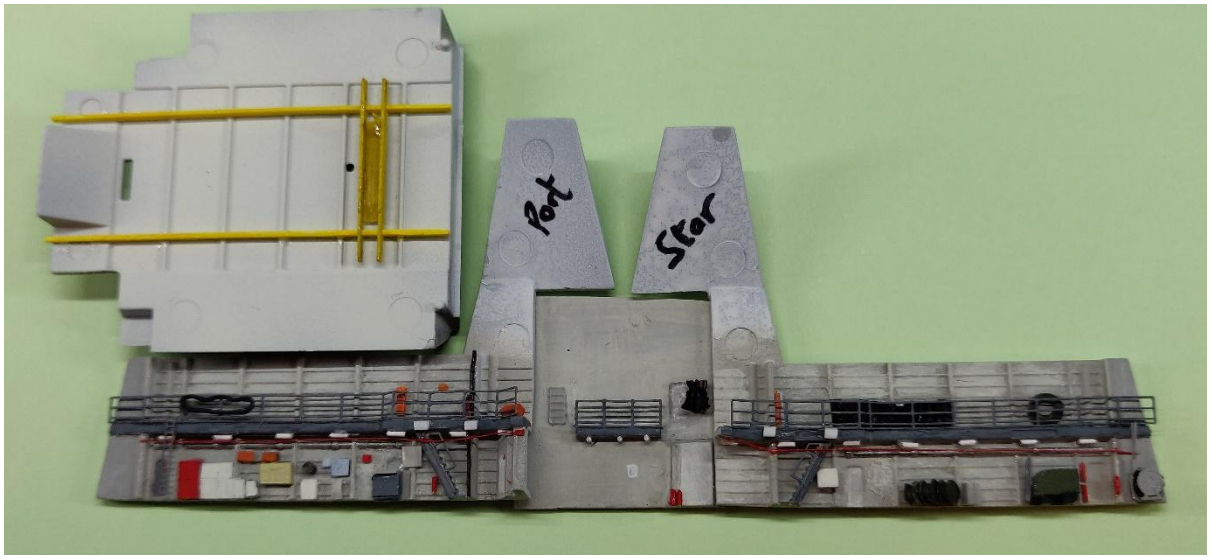
Made fire extinguishers by painting wire red and cutting into sub-2mm lengths. Glued into position next to doors in hangar and boat bays per photos. Similarly made large life raft cannister (?) from thicker wire, painted orange and glued to mezzanine corner in hangar.

Cut out the large window of the flight deck officer's caboose using an X-Acto knife. Started from outside to get neat lines then cut from inside until complete.

Primed a length of very fine wire and painted a length red for use as the fire pipes visible in the hangar.

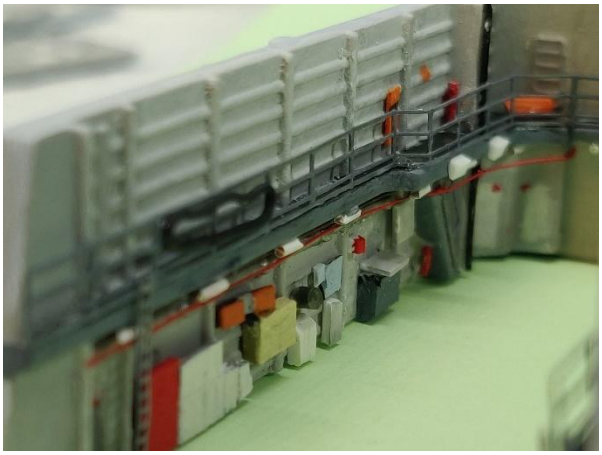
Made lockers, panels etc from styrene sheet to roughly represent the details along the hangar bulkheads. Began painting using photos as reference.

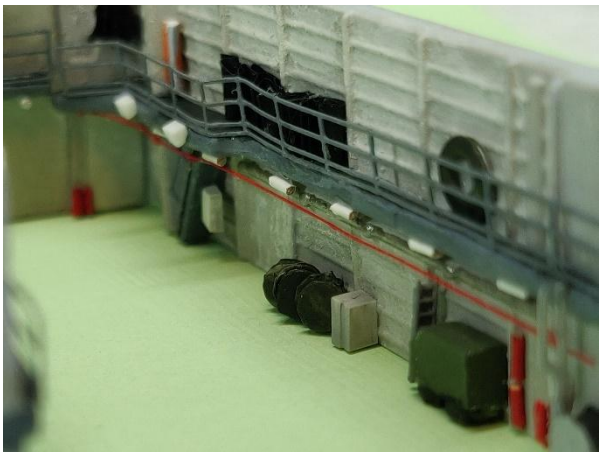
Identified the PE parts for the hangars and boat bays and primed and painted those not to be folded on the fret. Removed them from the fret and folded the required parts. Made rails for the gantry crane by trimming off the edge of styrene sheet.



Finished detailing and painting interiors of hangar and boat bays using photos as guide. Cut many tiny scrap rectangles of styrene sheet so I could often find a suitable pre-cut piece, saving labour. Stamped out large black “life ring” and the three large cable/hose drums, using punches. Wire for coil attached to railings. Thin paper (Tesco receipt) for hanging fire suits etc – tried to make paper doll chains but didn’t quite work.

Primed all PE railings and ladders on the fret with VMS Metal Prep 4K.

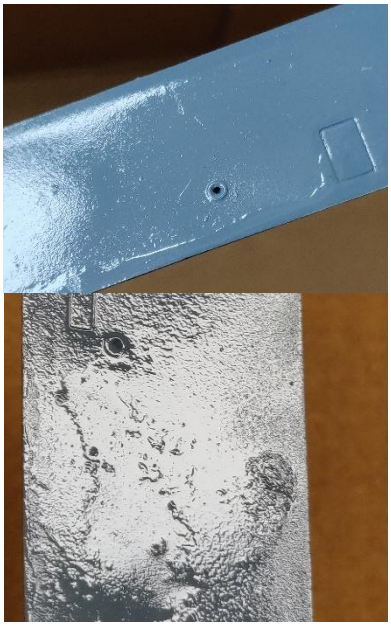




Added the railings, handrails and ladder to the hangar mezzanine. Kept PE details of boat bays for later, except boat cradles – scraped off moulded cradles with a knife and sanded flat with sandpaper glued to a wooden stick.

Varnishing disasters

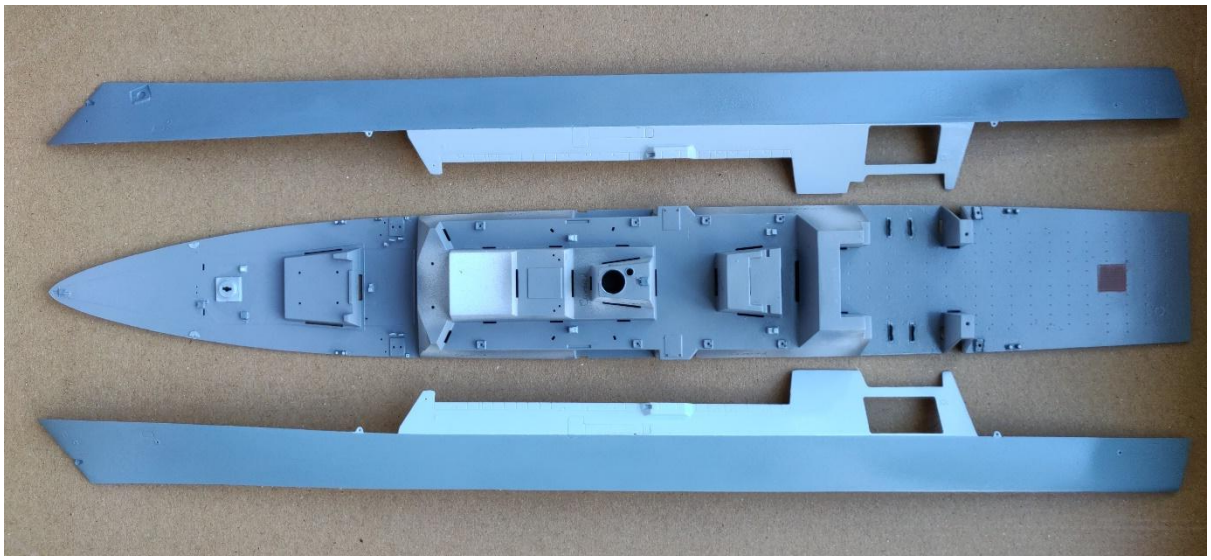
Varnished weather decks and hull sides with VMS gloss varnish before decals. Disaster. Airbrush would not spray varnish. Thinned with Vallejo Airbrush Thinners. Drying quickly when sprayed and found it hard to create the “wet look” recommended by



VMS in their product video. Put on too much and it ran or dried in patches, looking terrible. After Facebook advice from VMS, removed the worst of the varnish, especially thick runs, with Vallejo thinner cut 50/50 with thinner. Still some bad areas and couldn't get all varnish off – probably three or four days cured by the time I tried again. Surface remained tacky. Did some sanding and that damaged the underlying paint in places. More sanding, more damage but smoother surfaces.[3]

August 2022

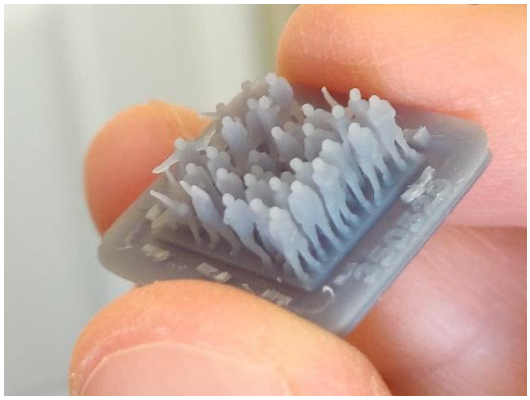
Ended up sanding and respraying weather decks and ship's sides (apart from masking painted details with Silly Putty). Probably a better finish than before. Used new sandpaper and sanding sticks in progressively finer grades. Gradient break on sides masked with Tamiya tape. Ready to re-varnish.



Repaired hatch holding posts knocked off in sanding, repainted Ocean Grey.

Re-varnished. Could not get VMS varnish to spray unthinned – instant tip dry, even at 30psi or higher. Instead used Winsor & Newton Galeria gloss acrylic varnish, three coats on successive days. Good results if slightly patchy but stayed sticky for weeks.

[3] See below, probably a bad bottle of varnish, perhaps frozen in transit.



North Star crew figures finally arrived. Removed protective gate with sprue cutters. Nice figures. Shame about customer service.

Weather deck painting and decals

Masked and brush painted helicopter tie-down square on flight deck in rusty brown colour. Leaching of paint under Tamiya tape, removed with water, thinner, scratching and touched up in deck colour.

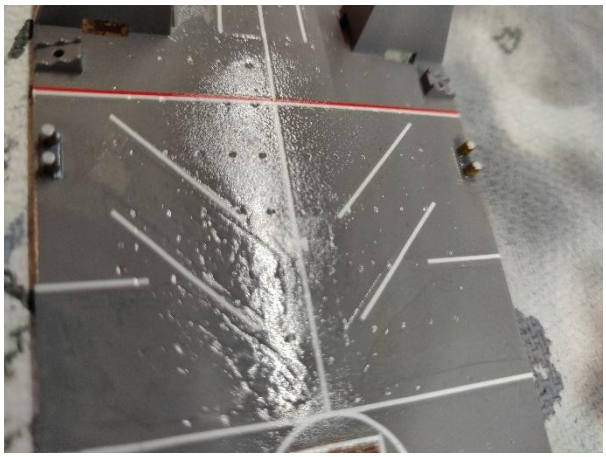
Used similar mixed colour for vents on the hangar door surround part, intending to mask those before spraying. Cut off moulded life ring ejectors, to be replaced with PE.

Added weather deck decals. Looked at photo references throughout, confirming that the central white line on decals 1 and 2 should be continuous and the parallel lines are just inside the hangar door. Decal 73 (red and white line) is red forward, white aft and runs between the fairleads on the hull sides. Micro Sol, Micro Set. Reasonably successful. Difficult to make the weapon warning circles circular when they have no diameter support. Centreline on flight deck is a tiny bit out of straight, but not noticeable. Did not fit decal 6 because gun platforms are not fitted yet. On flight deck, attempted to remove the large areas of blank decal between the white lines by gently scoring the outline with a knife, adding Micro Sol and scraping away the blank decal film with the knife. Successful except in one quadrant where the scraping was too enthusiastic and scratched the surface, plus scraping down to bare plastic along the deck edge. Will need repainting.

Several coats of Micro Sol to blend decals.

The square around the helicopter securing pad should not be white as on the decal. It appears a light tan or grey colour on pictures. Painted it in tan colour.

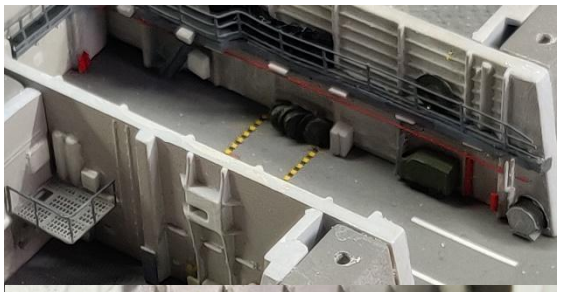
Brush painted the damaged area of the flight deck by brush and extended the damaged white line decal in white with a sable lining brush. Gloss coated over the decals by airbrush.

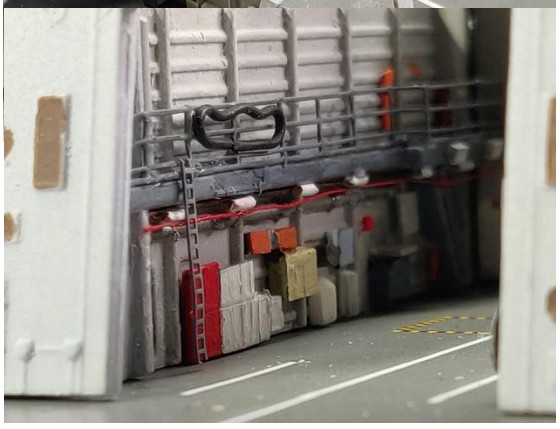


Noted that the cut edges of the decals were still visible. Following YouTube advice, added more varnish generously by brush to these areas with a view to sanding back. Seems to be partially effective in hiding the visible edges and has not hidden surface details. Added another airbrushed coat of gloss, still showing slightly. Test overspray of matt varnish, still showing the edges.

Refixed one of the hatch securing posts, for the nth time. They are too easily knocked off and should have been added later.

Airbrushed the hangar/boat bay deck with Winsor & Newton Galeria matt varnish. Fitted the bulkheads then the roof carefully using superglue. Some sanding needed and some force to align the parts with the supporting posts on the main deck part. Several attempts to get the roof part to fix to the post on the port side and ended up using Gorilla Glue and a clamp to get it to stay down. Some filling of gaps will be needed.





Mast assemblies

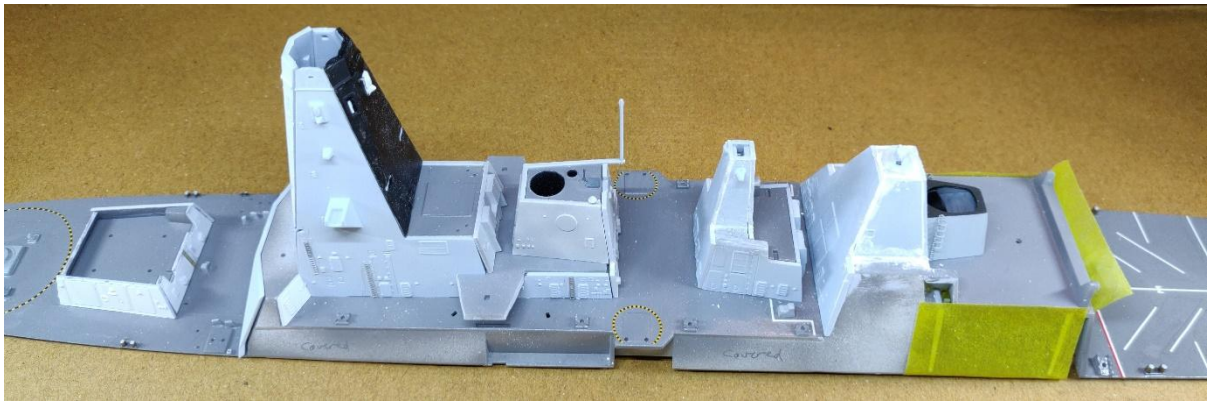
Dry fitted the parts for the aft mast and uptake. Filed off moulded ladders on all mast parts and replaced them with PE ladders. One pinged off when the upper mid deck was added , but in fact is not needed. Made the four PE ladders needed including the two caged ladders by rolling the cage around a drill bit. Made errors in fitting other (uncaged) ladders: these are special PE parts not part of the length of utility ladder provided in the set. There were some missing stand-off posts and the others were easily damaged, so I removed them all and fixed the ladders directly to the surface. Got the port side ladder in the wrong place: it is not as shown in the WEM instructions, but neither is it symmetrical with the starboard one. Instead, it faces to port and climbs the post on the deck part. Finally, the tops of the ladder handrails should not be joined together by a bar.

Dry-fitted the aft mast front and back and the aft uptake. Added filler to the gaps around the base on both sides and the gaps in the deck along the side. Observed the halyards and their pulleys on the starboard side of the aft mast, crudely mounded on the kit part. Scraped off the moulded bar representing the halyards, but not the blocks representing the pulleys and coils.

Finished painting the aft mast parts and aft uptake and its housing. Fitted them and glued by holding with rubber band while running superglue down the inside of the joints. Lots of gaps that will need filling, and deck levels are wrong so will need sanding and filling. Most paintwork will have to be done again.

Almost decided to add plastic card decks along the sides of the aft mast to cover all the gaps, but dry-fitting the sides showed the level is important as

they need to be flush with the ship's side. Found it unexpectedly easy to cut and file down the mast front and rear parts to the level of the deck. Added filler to all the gaps in the mast and deck and left to dry. I now agree with the advice I saw recently online (but too late) to cut off the aft mast side pieces from the hangar side bulkheads – it would have been much easier to assemble the mast off the model, paint it and then fit it and fill any gaps with the deck. Will add the top piece to the mast before repainting the whole thing in place. Painting parts before assembly is not going well and results in repeated work.



Sanded the top of the mast to get all sides flush. Tried the top part (base of the radar) and trimmed it to fit, including cutting steps in the base to fit over the locating ridges, as otherwise the base was too thick and would protrude. Big gaps either side will need filling.

Decided not to do further painting of masts until they are all done.

Filled the remaining gaps in the aft mast. Dry fitted the parts of the mid mast and sanded to get best fit, then glued them off the model, starting with the square pats at the bottom. Filled gaps. Mast can now be popped on and off the model.

Cleaned up parts and test-fitted all remaining superstructure bulkhead parts and mid-upper deck. Decided to continue to paint main mast parts before assembly in view of tricky masking if done afterwards, and possibility that the parts will fit seamlessly. Will also try to do foremast PE before assembly.

September 2022

Most of the mid mast should be painted black all round, starting about head height from side decks. The foremast black area on the back starts immediately below the supports for the yardarms (which are not black) and above a small

disk in the centre of the back. Rear side of aft mast is also black down to the level of the uptake deck. The top circle is black but the surrounding flat area is Light Weatherwork Grey.

The foremast “tiles” are a beige colour (in some pictures only) and back the two small radars, so they wrap around the port side and include the forward face of the satcom antenna dome supporting arm. The lower, small tiles start from the centreline and there are 12 full tiles wide at the bottom, 10 at the top, 9 high. The upper larger tiles across the whole width are 10 full tiles wide at the bottom, 8 at the top, 4.6 high. The lower tiles wrap onto the angled panel on port side only (though there is a gap) then round and onto the port dome arm – its front face is entirely covered apart from the block below the dome. The upper tiles are only on the front face. Their thickness is barely perceptible.

The gaff on the end of the dome supporting arms is square in section, but set on edge diamond-wise so the pulley is attached to the lowest angle edge.

Assembled and glued all the mast “box” assemblies except the foremast, trying very hard to get close joins and using the kit deck as formers. Removed all remains of fitting tabs so the boxes remain removable. Filled all joints with Perfect Plastic Putty and sanded smooth, including the already built aft mast. Ready for painting.

Added the missing flag gaff to the rear port quarter of the foremast by drilling a hole and using a piece of steel pin – wanted the strength so abandoned using plastic even though it should be rectangular in section. Used UHU strong repair glue, for no very good reason. Primed it.

Tried to fill in the decal edges on the flight deck with gloss varnish, then added a generous coat of gloss varnish with a brush, not worrying about brush marks. VMS varnish dries more quickly and thoroughly than Winsor & Newton Galeria.

Sanded back using successively 800, 1200 and 2500 grit sandpaper and decal edges are much less visible.

Sanded all the weather decks using successively 800 and 1200 grit sandpaper, to remove the "orange peel" effect from earlier varnish. Managed to go through the varnish and damage the front gun ring decal, taking off the black in places. Touched it up with a fine marker pen. Touched up some yellow with fine brush. Also removed a little paint around edges. Touched up grey with brush. Weather decks now look patchy but I hope that is just different reflectivity and will look better after matt varnish.

All the hatch securing posts broke off yet again, so reserved them to be re-fitted later and removed the mounds of glue accumulated from multiple repairs to them.

Looked at the yardarm PE. It is extremely delicate so abandoned the idea of fitting it before assembling the mast. Leave it as late as possible to avoid damage in handling. Considered whether the PE is actually too fine for the main yardarm structure but looking at pictured confirms the delicate cruciform structure as depicted by the PE. The kit fitting slots are large so filled them ahead of painting – correct locating could be difficult when the PE is fitted.

Wrote the colour code for each facet on the back to help with painting.

Sprayed (& some brush paint) the loose parts (masts etc) with the required colours, masking as required with tape. First impression is that colour contrasts may not be strong enough.

October 2022

Carefully masked and sprayed the matt black surfaces on the masts. Some white crackling effect on some – paint too thin? Covered with brush painting. Boundary line above main uptake is wonky, needs re-masking and painting.

The bridge, bridge roof and minigun/CIWS sponsons

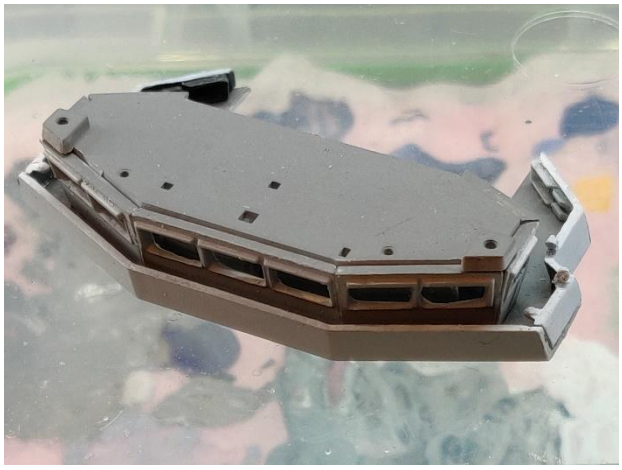
Started to assemble the bridge. Lots of clean-up on bridge bulkheads. Numbered on back to avoid confusing similar parts. Paint before assembly. Interior should be off-white bulkheads, grey consoles, bright blue Captain's chair (HMS Duncan). Painted a bright blue stripe across the console screens to

be framed with grey paint to represent screens. Noted that the bottom of the foremast forms the rear bulkhead of the bridge interior painted it off-white.

Kit bridge windows looked a bit too small and too oblong compared to photos of the real ship (ie should be squarer). Not easy to correct without losing detail of the surround but used a flat, pointed riffling file to widen the window aperture at the top and chamfer the window frames from the inside, to give the impression of a thinner bulkhead. In reality the windows are not recessed on either side. Decided to attempt using clear acetate rather than Micro Kristal Klear for windows to attempt to make the interior more visible, but fixing across the inside would worsen the impression of recessed windows so will have to be cut precisely to the window apertures. Left for later.

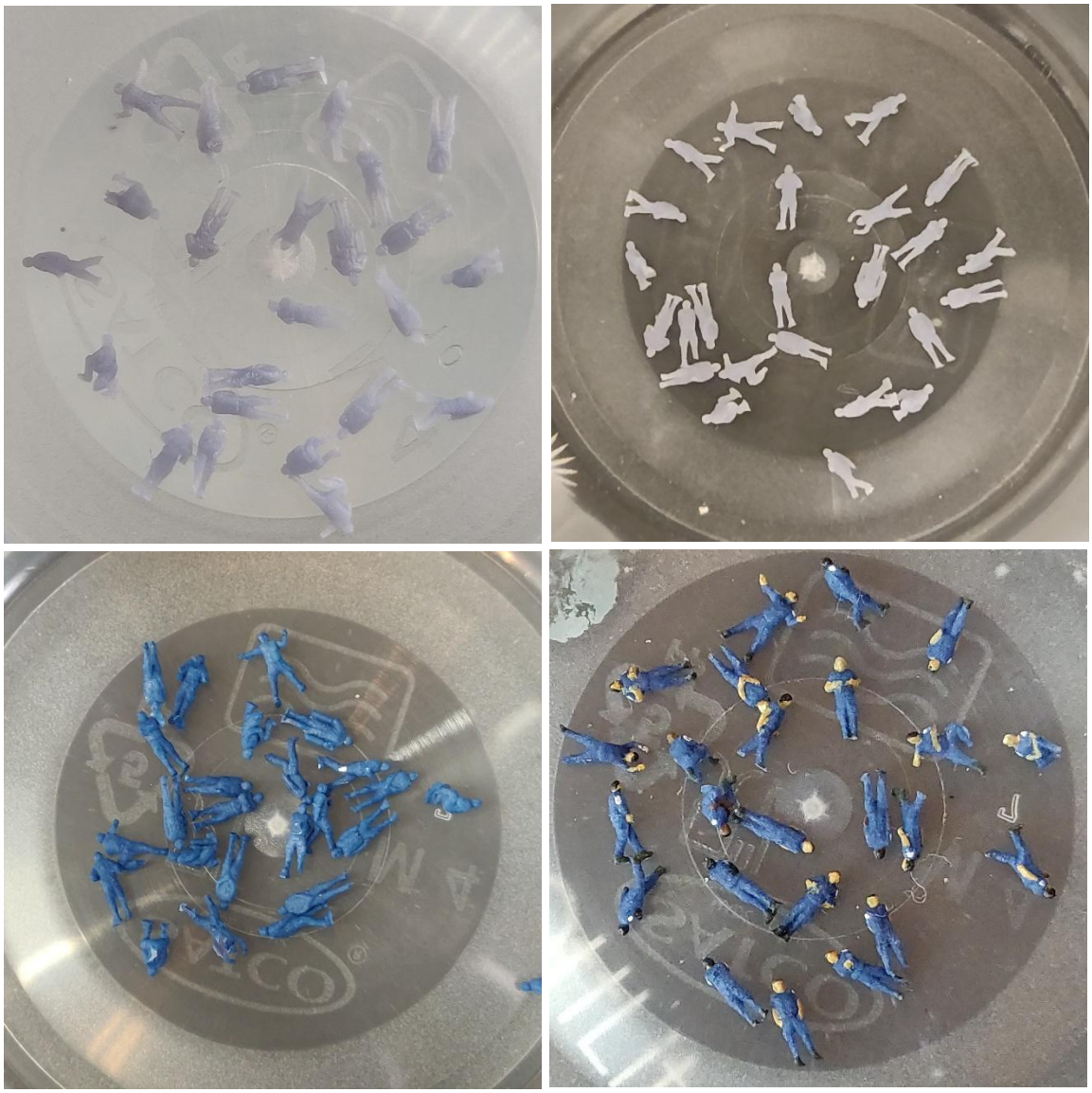
November 2022

Airbrush painted bridge outer bulkheads and rail in various colour shades down to -1, rest to follow. Sanded and repainted foremast front.



Assembled the bridge with MIG acrylic glue, dry-fitting the roof to use it as a jig to position the bulkheads correctly but leaving it loose for access. Bridge bulkheads went together reasonably tightly but there are some small gaps. Very obvious gaps in the bridge bulwarks and the fitting of the bridge roof that will need filling – pre-painting these pieces may have been a waste of time. Bridge roof is too thick to fit in the wall recesses provided for it – it should sit flush.

Cut about 20 crew figures off the base with a new chisel-type knife blade and painted them all Dark Mediterranean Blue in the bottom of a cup with a No 2



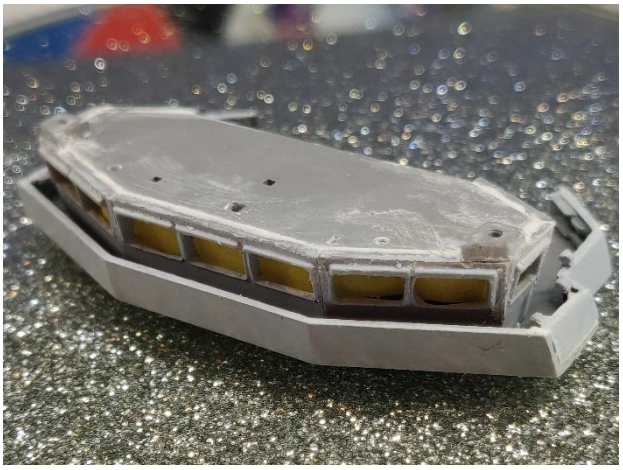
brush. Painted heads and forearms with flesh colour (50/50 Basic Flesh tone and Dark Flesh + a drop Burnt Umber) or black or Asian flesh tones. Painted on hair in variety of colours. Painted boots Tire Black. Made several attempts at devising shaped “stamps” to put white badges on upper arms but settled for spots with a 000 brush.

Glued half a dozen figures on the bridge.

Later on I decided that this uniform colour was too light, so all the remaining figures were repainted in a darker blue: see page 190.

Masked the bridge windows with tape from the inside (against gloss varnish and weathering), trying to ensure it can be removed from the back when the roof is fitted. Filed down the bottom edges of the roof so it fitted flush with the

walls. Fixed it. Filled the large gaps. Several attempts and filling and painting, the first showing big valleys that should have been filled. Sanded and re-sprayed the roof. Brush painted bulkheads and bulwark to cover damage and the filling of the gaps where the bulwark meets the deck piece.



Marks on roof so re-sanded it, but took some paint off so will have to be resprayed. Started brush painting outer bulkheads and walkway rail.

Bridge wings: GPMG mount is in the first “bump” athwart the orthogonal bridge window. The stripe around the bridge bulwark continues all the way around the sides but slopes down slightly on the sides. It is covered by applique armour on two sides around the GPMG mount say 5cm thick which is rivetted. The second item on the rail is a white loudhailer. The third lump on the railing is ship’s colour, function unknown. As the wire or ridge outside the bridge rail should run all the way round and the GPMG position applique armour was needed, added with 0.1mm pre-primed copper wire and paper respectively – thinnest styrene I had was 0.3mm but should probably have used it. Whole outside of bridge repainted by brush, writing my shade codes on the bottom of the bridge so as not to lose them before it was finished.

The minigun position on the deck below is entirely missing in the kit. It also has applique armour shaped outward to form a sponson projecting about 50cm with sides angled back at about 70°. In use it has a black spent cartridge chute that runs almost halfway down the slope of the ship’s side. Made the minigun mounts with 0.3mm sheet and the sponson from a 1.5mm square of 1mm sheet,

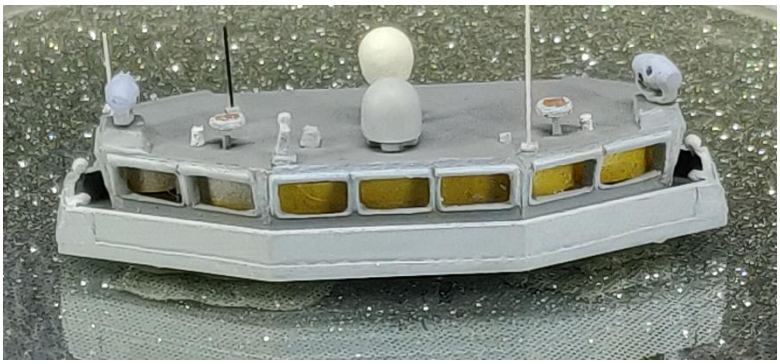
carved and sanded to shape, with the partial shield on the right side of the mount added with paper. Primed and painted.

Cut off and cleaned up the fittings for the bridge roof. Sprayed shade 0 using masking tape to avoid the tiny pieces blowing away.

The Ultra 2500 electro-optical directors (barrel-shaped items at the ends of the bridge roof) look more light blue than the ship's colour, or could be the same pale green as the three big satcom antenna domes – body only, not the bracket. Smaller dome (INMARSAT) on bridge roof is white, larger one (METOC) is grey. Two antennas on the roof – starboard short chunky pole antenna is black, about as tall as the higher dome; the port side tall antenna is white, slightly tapered and almost as tall as the yardarms. The black pole antenna is mounted on a grey box, but seems to be absent on Daring and Diamond, present on Dragon and Duncan. It is in the middle of the roof fore-aft, and directly behind the starboard side "mushroom". The "mushrooms" have a reddish ring on top.

Corrections to kit roof layout: the long antenna base is too far back. It should have a flat, square plinth mounted just above the angle of the windows. There is a matching base starboard side with the funny-shaped thing in it (high point to aft). Wrong position in kit. The smaller dome (INMARSAT antenna) should be slightly further forward – it overlaps the large METOC dome. There is a gubbins immediately behind the smaller dome post (cover the kit hole) and a small box to the starboard side of the bigger dome, centred on the third window. Did all these, pre-painting each piece. Glued to the roof. Filled remaining holes with putty. sanded and repainted roof yet again!

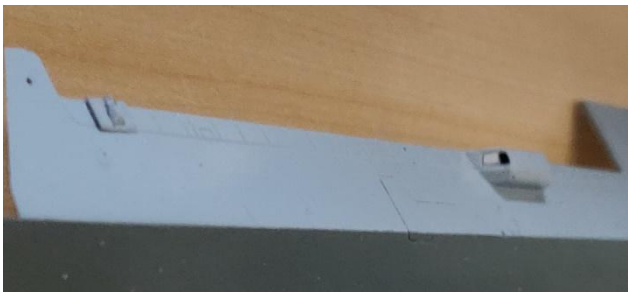
December 2022



Comparing photos, noted some more small details on the roof so added those, including replacing the kit "mushroom" tops with larger disks stamped out of plastic sheet with edges sanded to shape, and adding the small white antenna at starboard aft angle of roof.

Dilemma: noticed that the white dome (the INMARSAT antenna) was replaced with a much smaller version around 2016, at or about the time that the Harpoon launchers were fitted. Cannot find any pictures with Harpoon and the older-style large white dome. Should I replace the dome with a scratch-built smaller one that will look less good?[4]

The CIWS sponson does not show the wide opening as on the kit on the forward side, but a narrower gap folding round the corner – faired over part of the kit gap with plastic sheet cut and sanded to size. Applied filler to the gaps and painted.



Fitted the minigun positions made earlier[5] by cutting a notch in the kit railing and gluing in position. Looks good.

Back to general construction

More sanding of the hull sides, again damaged the paint, fixed by brush.

[4] Later received the smaller version as part the Atlantic Models Type 23 upgrade kit, so will probably use that.

[5] See page 20

Scuttle-type window frames (eg in transom and boat bay doors) appear different colours in different photos. May be dull metallic, rusting in service? Sometimes hull colour.

Drilled out the hawseholes with a 0.7mm drill for the smaller ones on the hull sides (larger on transom, note the starboard hawsehole on the transom is larger). As the kit surrounds were poorly defined and not circular, masked by stamping out holes of the required size in masking tape and applying around the drilled holes. Painted mixture of bronze and silver – looks very gold, should probably be more white metal colour. Also painted the transom windows – same metallic colour for frames, different greys for windows – note they seem to be paired vertically, so top and bottom look the same grey but left to right look different.

Yet more correction and repainting of the divisions between black and grey on the masts. Found hand painting was more accurate than using masking tape. Also some more filler where joints still showed.

Dry fitted everything again.

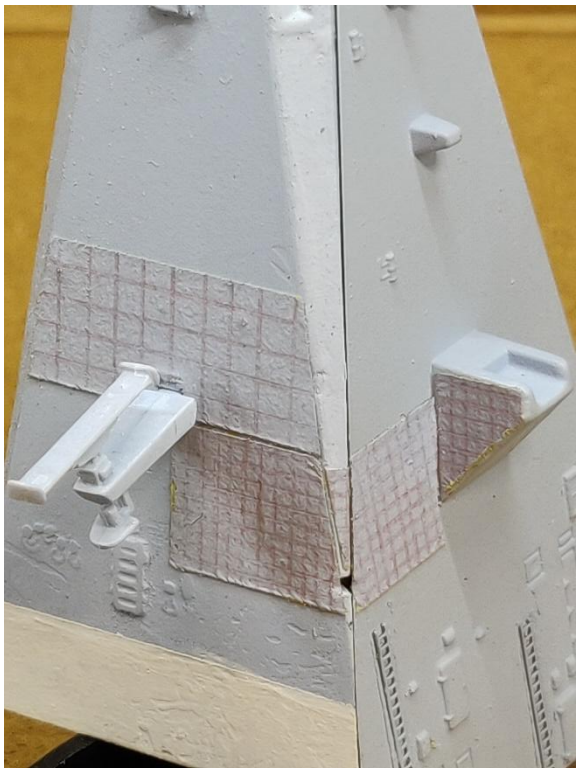
Sanded down plastic rod to 0.7mm to use for the hawsehole plugs. Sanded ends flat and dipped in paint (Wolf Grey).

Cut off and cleaned up the radar posts (11D and 64E) to go on the front of the foremast. Both, but especially the central radar, took a lot of filing to get them to fit flush. First coat of paint.

To make the radar-absorbent tiles for the foremast, painted a length of 40mm masking tape in Wolf Grey then drew on it with a 0.03mm brown Copic Multiliner pen (purchased for the purpose) to create two grids, of 1mm and 2mm squares, which are about right for the scale tiles. Experimented with a cool grey pen, but the brown looked more like the reference pictures. Toned down the result by applying Wolf Grey washes on top.

Realised that there are similar tiles on surfaces on the starboard quarter behind the navigation radar there, including on the back of the stern uptake. They will be very difficult to do now, with the ladders fitted etc. They don’t

show up consistently in photos. Decided not to do them – they are on shaded surfaces so wouldn't show prominently.[6]

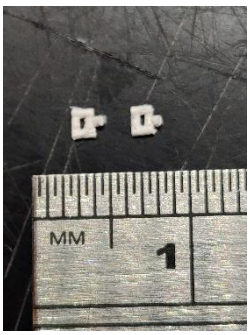


January 2023

Applied the tape radar-absorbent tiles by cutting into strips of the correct height and then drawing the vertical cuts on with the tape stuck in place. Trial and error until all fit correctly. Not a perfect job – contamination of the sticky side with particles and roughening form repeated handling causes some unevenness, and yellow tape shows on some frayed edges that will have to be painted over. Feedback on the Facebook group suggests litho plates (zinc foil) would be better option, with lines scribed in.

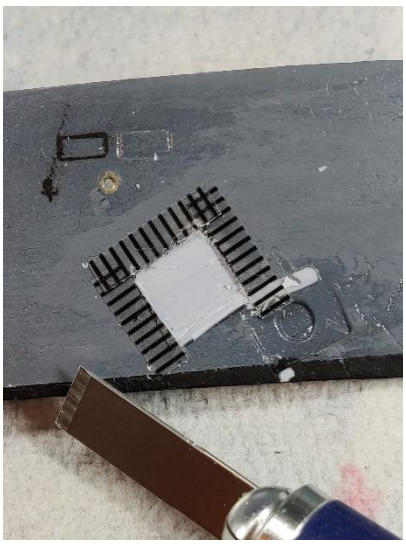
Repainted the vents on the hangar outer rear bulkhead because I was not happy with the brown colour. Tidied up all window edges. Painted on missing vents and the tall windows on the sides of the caboose. Duncan has a box above the caboose (which I added later) and had a frame on the port side of the bulkhead, which photos show was removed later, but more antennas were added above the hangar door.

Made the firefighting monitors (foam sprayers) for the hangar bulkhead, and scraped off the vestigial moulded ones (repainted the bulkhead). Used scrap styrene to add the missing port support to match the starboard one. Hoses were made from fine wire and painted golden brown, holes drilled to take them so they could be pulled through to the required length. Monitors were made from fine styrene rod glued in a



[6] Of course I changed my mind later: see page 153 &ff.

hollow square with a piece added as the nozzle, painted red with brass nozzle, and fixed – only an approximation of complex items.

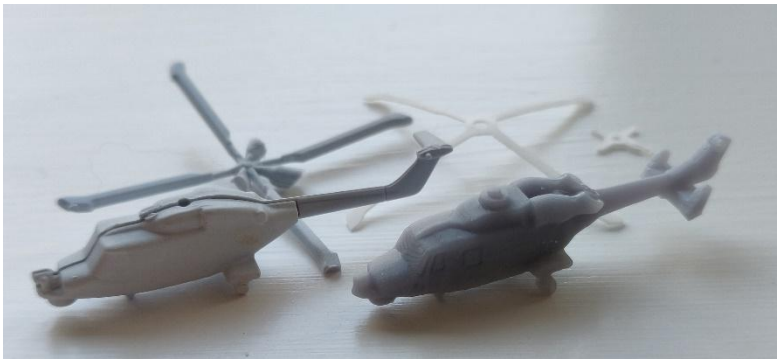


Decided I would, after all, move the starboard bow anchor, along with the forward hawse holes and seamanship doors – which will mean repainting the sides again. Marked out a 7mm square with top corner 9mm aft and 4mm up from the kit top corner – on pictures the recess looks larger and squarer than the kit version. Used DSPIAE scribing tape for the first time to cut the edges with a No 11 blade. The tape made it very easy to cut straight lines. Used a chisel blade to cut the recess sloping down from the top, with sharper slope

meeting it from the bottom. Quite easy to do. Added the flat piece at the top of the aperture from styrene sheet.

Drilled out the hawse holes in their new positions and scribed the seamanship doors using the Hasegawa metal template to get the curved corners and straight lines and a simple scribing spike. Also scribed the remaining kit doors to make them deeper and sharper. Filled the old ones and sanded.

Lots more sanding of the sides, removing almost all the varnish, and with it, the raised parts of the hawse holes. Several attempts at re-doing them with putty, but in the end decided that it isn't necessary for them to be raised above the surface – what is needed is to countersink the holes, which I did with an obtuse bead reaming tool, very easily. Aiming for external diameter 1.5mm.

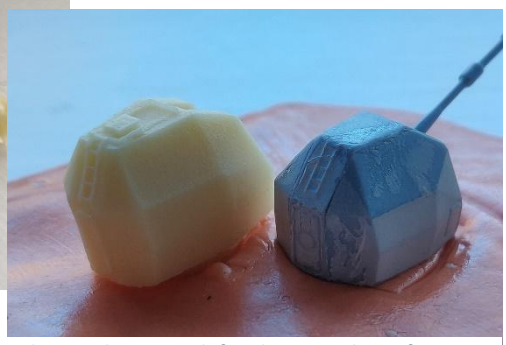


Airfix Lynx, Dorset Print Man Wildcat

Meanwhile the 3D printed Wildcat helicopters arrived from Dorset Print Man, but I was not greatly impressed. After some discussion on Facebook, discovered and ordered the Atlantic Models Type 23 Frigate Sea Ceptor upgrade, which includes the Wildcat as well as the main turret, Pacific 24 RIBs and the smaller INMARSAT dome that I can use. Also ordered the warning circles and signs decal set. Decided against the life rafts set because they don't look any better than the kit parts in the photo. Also decided against trying to get the Veteran Models weapons (DS30M, Phalanx and Mk 8 turret), because they don't look like great improvements.

Airfix Lynx, Dorset Print Man Wildcat, Atlantic Wildcat

The Atlantic Models set arrived. Not greatly impressed with that either. I think the Dorset Print Man Wildcat is marginally better, though



Mk 8 Mod 1 turret: left Atlantic, right Airfix

neither captures the shape particularly well, especially the angular tail boom. Will probably use the 3D printed helicopter with the Atlantic PE rotor and other additions – lots of PE for the Wildcat! The Atlantic boats are no better than Airfix and the resin does not have crisp details. The main turret looks a bit soft at the angles – looking at photos, the Atlantic shape looks better and its details are better, so I will use the Atlantic part. The pedestal will need cutting down, as part of the mounting is moulded on the Airfix deck.

February 2023

After lots of sanding, I plucked up courage to re-spray everything done so far with VMS gloss varnish, prior to pinwashes and remaining decals. Lots of the grilles etc would be hard to access once fixed to the ship, so decided to pinwash while still loose. A new bottle of varnish shows that the old one was off – far too thick and gloopy. It was probably frozen in transit. New bottle does spray but I get terrible tip dry – a big gob of varnish on the needle after few seconds spraying. Sprayed everything twice, a day apart. Result is very patchy, with a lot of the varnish drying matt – I suspect where the airflow from the airbrush dries it. Discussion in the VMS Facebook group suggests I should be trying much lower spraying pressure.

The main mast

Started work on the polemast antennas. Trimmed off the kit discs and VHF/UHF dipole antennas (the B shaped antennas). Sanded down the sides and marked the disc position in red pen. Filled the kit dipole locating holes with AK grey putty. Sanded the top part (the JTIDS UHF antenna) – considered replacing it with brass rod, but looking at photos it is not too bad in its thickness. Primed the PE parts for the mast on the fret. Thinks: the VMS Metal Prep 4K is also ridiculously thick – is that also off, frozen?

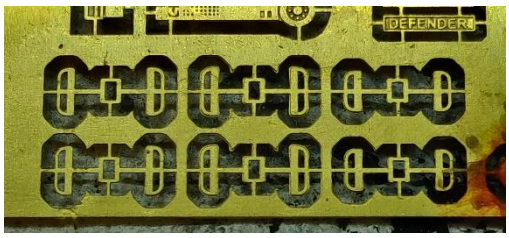
Realised that the PE discs will not fit over the cap at the top of the lower section of the antenna mast, at least without radically widening the holes in the discs, so I will have to cut the top off the mast and glue it back after sliding the discs on. Made the cut with a knife, just below the square flange, having marked both sides so I can glue back in the same orientation.

Fitted the three brass disc screens, having pre-marked the levels in pen before removing all traces of the plastic discs. Two were very loose, so supported them with a blob of Blu-tac and glued all three from the bottom with drop on each edge of Mig Ultra Glue. Left overnight and carefully removed the Blu-tac, but that alone was enough to disturb the two discs. The glue residue was enough to allow them to be repositioned accurately without the Blu-tac so added more glue to all three, again from the underside. I may have used too much water for clean-up first time – even so the result is bit messy with glue residue both on the discs and the mast.

After moving up the middle disc

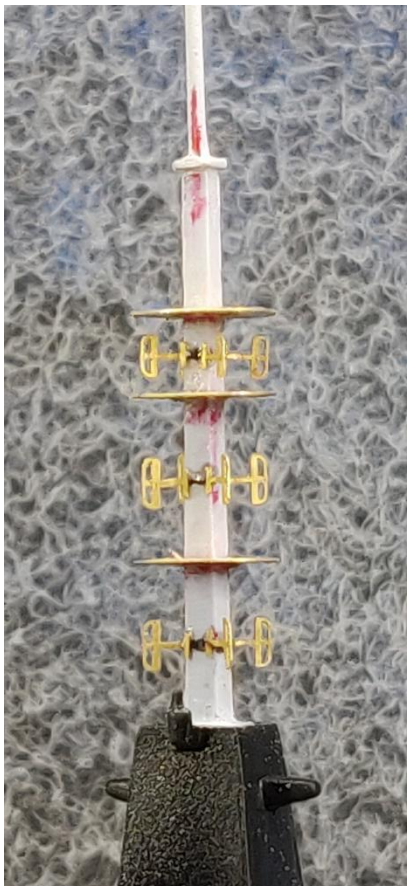
Comparing the result against a photo scaled on screen, the middle disc looks about 1mm too low. The top two should be much closer together than the bottom two. Moved it and re-glued. After several additions of small amounts of glue, got all three disks adequately fixed. Scraped away surplus glue with a knife.

Cleaned up the dipole antennas with a diamond file – they seemed to have "flash" around the parts and are already much heavier-looking than the real thing. Kept them in pairs whilst doing this for easier handling, then removed the final pieces of fret. After discussion on Facebook[7], faced with poor instructions and the prospect of gluing the brass edge to the plastic corner edge, decided to glue the small vertical pieces of the dipole antennas



[7] PE Rookies group

to the fore and aft faces of the mast, then bend them to the 45° angle. Got them fixed without too much difficulty – marked the level on the mast with line around the mast to get accurate and consistent height. Left the glue to cure several hours, but attempting to bend them pinged most of them off. It was impossible to apply enough pressure to the base to prevent the bending stress being transferred to the glued joint. Tried bending the tiny base plate to 45° before refitting, which seems to work although it is impossible to judge the angle on such a small scale so some may well not be flat on the surface and thus not strongly fixed. Some glue mess but looks OK.



Glued back the top mast section (JTIDS antenna).

Made the small cap on the top of the mast/antenna with a finger projection aftward by cutting out a shape from scrap styrene sheet. Couldn't find a high resolution photo so had to guess at the shape. The real thing has a square of wires under the aft projection but decided they would be invisible at this scale.

Cleaned up the shelf and domed equipment to go on the back of the mainmast. The top dome is grey with four large black holes around it, the bottom "bucket" black in some pictures but grey on Duncan. Looks like the kit part is actually too short – the dome is well above the level of the small deck on the mast. Decided to leave as is – the difference is small, if any. The skirt around it is oversized. Need to drill or paint the holes.

Primed the mast and shelf with black Vallejo Surface Primer. Very pleased with the result. Just need to paint the dipole antennas light grey. Duncan seems to have the small deck and shelf coloured deck grey on the otherwise black mast. Masked the edges with 1mm Tamiya tape and brush painted the deck grey.

Also need to add bi-conical dipole UHF antennas (the pagoda-type antennas) on the projections either side of the mainmast, absent in the kit. They are a vertical shaft with a thick circle then a pointed top. Not as tall as the mast deck. The circle diameter is larger than the diameter of the pointed bit and is perhaps ¼ of the length of the mast projection supporting it.

After several experiments, turned the parts out of 0.8mm brass rod by putting it in the chuck of the Dremel and shaping it with files. Quite successful though in retrospect the wider circle should have been a bit wider – perhaps better to start from 1mm rod[8]. Primed with Metal Prep 4K.

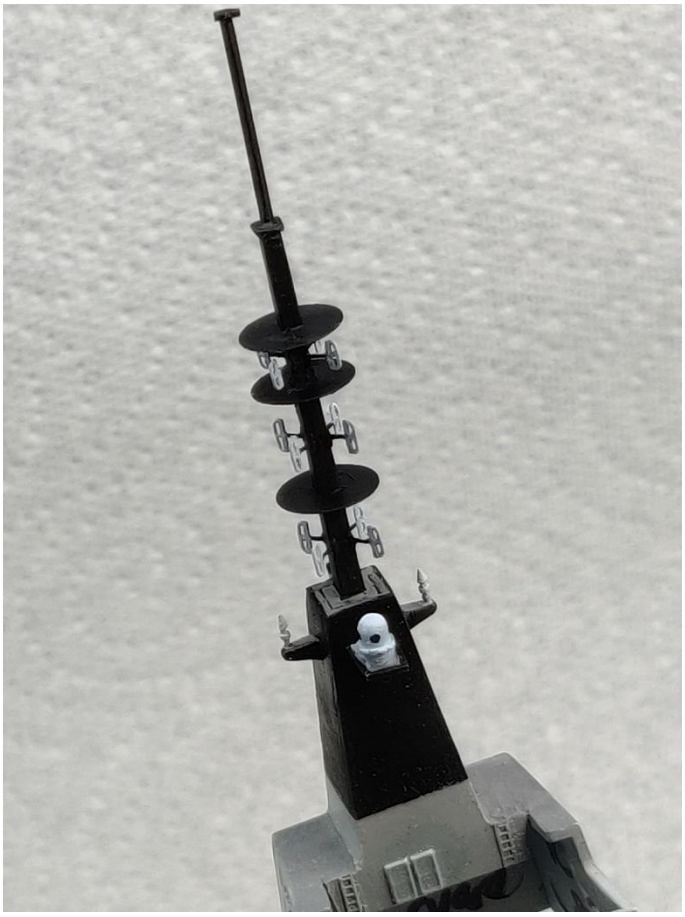
Checked on the piece of equipment on the front the mast. It is indistinct in the photos but the top is a stubby antenna painted grey. The kit rendition isn't bad so decided to leave it.

Painted the dipole antennas and pagoda antennas – white with a touch of Wolf Grey for highlight side, Wolf Grey for shaded side. Broke off two dipoles in doing it. I am still putting too much paint on and getting rough surfaces – I must thin paint better. Drilled holes and fitted the pagoda antennas with Mig Ultra Glue.

Fixed the rear shelf with superglue and re-attached the dipoles. Tried to remove some surplus with de-bonder and found it took the paint off, so had to repaint.

[8] See page 38 for later addition of plastic rings.

Still not getting a good finish hand painting and my attempts left a thick, rough surface and kept filling the holes, which I then cleared with knife, damaging the paint and requiring yet another coat. One dipole got so bad I stripped it with VMS Clean Slate and repainted from bare brass.



Lots of bits and pieces

Painted the life rings on the PE fret fluorescent orange, for no good reason at this point. Realised they should be single-sided, because two rings fold into one, but I have painted both sides. The thickness and roughness of the paint caused problems later, when I came to fold the parts and found they would not go together cleanly.

Examined the upperworks modules and decided I was not happy with the visible joins. Despite already having varnished them, added AK Grey Putty and sanded. Thought the job was done but when I repainted by brush (several different paint shades) the joins could still be seen, although they were less prominent than before. As so often, I put on multiple coats of paint but could not get a smooth finish. In the end airbrushed the main parts again, including one side of the aft mast already fixed on the ship. Will need to re-varnish these parts, but I wanted to try varnishing at lower pressure in any event.

Cut off the plastic antenna from the main uptake module and drilled the base with a 0.3mm drill – I jumped when the drill broke through and broke the bit. Replaced the antenna with 0.2mm brass rod the same length as the plastic part (20mm) – but may actually need to be longer, check photos: best guess is that it goes just above the level of the bottom disk on the main mast, but lining up

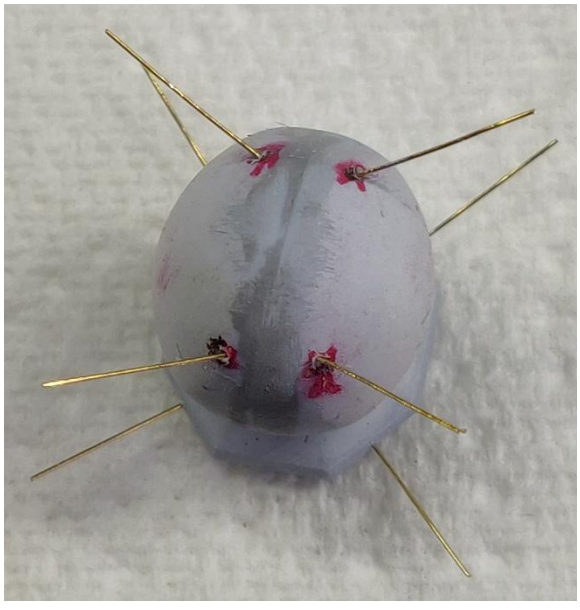
the pieces shows that the kit version was only a little short, perhaps 3mm. It probably has a lower thicker section then a thin upper half.

Again sanded and repainted some of the matt black surfaces, being careful to thin the paint before brush painting and adding some Vallejo retarder medium. An improvement but still not a perfect flat finish.

Still not happy with the scratched and pitted finish on the starboard hull side so painted over the damaged areas with a fairly thick coat of Mr Aqueous Surfacer 1000. When completely dry (overnight) sanded it back with increasingly fine sanding sticks and pads to a fine surface, masked the other colours and airbrushed again. Got one puddle that will have to be sanded back when dry and splashed some cleaner on when cleaning the airbrush. So another coat will be needed.

Painted the four loose RESM antennas (the rectangles on the foremast, part of Outfit UAT electronic surveillance) in Wolf Grey and superglued them in place on the angles of the foremast. They match the moulded-on ones quite well.

Began construction of the main Sampson radome (Type 1045 MFR) to go atop the foremast. Rookie error, I glued the two halves of the dome together before looking at the instructions, but managed to separate them. Studied photos and marked the positions for the four lightning conductors on the dome, surprisingly high and not evenly spaced, noting that the dome is not fully round. Started the holes with the point of a No 11 blade then drilled 0.3mm holes at approximately the right angle. Fed through 0.2mm brass rod and bent over on the inside. Also cut off the lightning conductors on the kit part for the foremast top, drilled and added brass rod replacements, securing all the new lightning conductors with Mig Ultra Glue on the inside over the bent end for strength. When dry, trimmed all the lightning conductors to the kit part length of 8.5mm using the kit part as a guide. Gently bent the outer parts into correct positions with the handle of tweezers. Glued the two halves of the

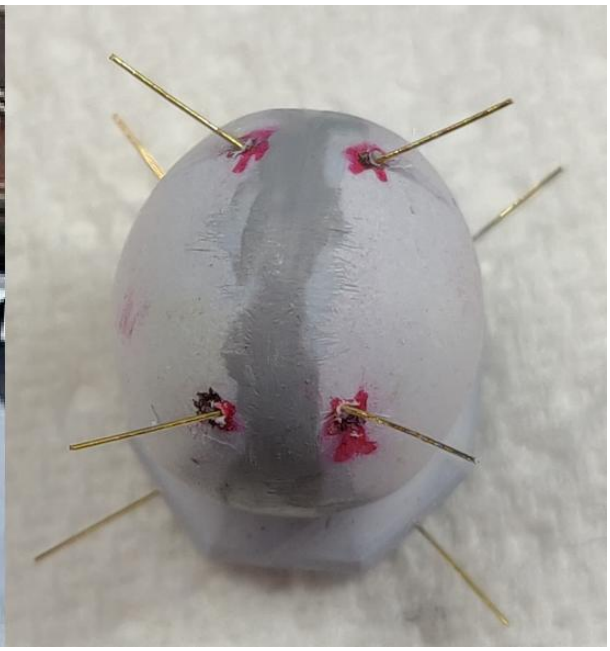


dome together with Extra Thin and painted two coats of Mr Aqueous Surfacer 1000 over the join.

Noted that the radome has two large circles of slightly lighter colour just below the lightning conductors at the top and almost down to the base at the bottom. In some pictures there are darker “eyes”, small circles appearing to make this circle look like a face!

March 2023

Comparing to photos, the 8.5mm spike lightning conductors looked too long. Asked on Facebook and someone measured their Trumpeter kit parts and told me their spikes were 5.2mm. Trimmed them back to that length and they are a perfect match for the photo of the real thing. Primed the spikes with VMS Metal Prep 4K.



Gave the join in the radome three coats of Mr Aqueous Surfacer 1000 but the join line was still visible so gave it a thick coat of Mr Dissolved Putty. When dry, sanded it back. Sanding sticks kept catching on the spikes and bending them, but fortunately none broke. In retrospect it might have been better to assemble the dome first and put the spikes in later.

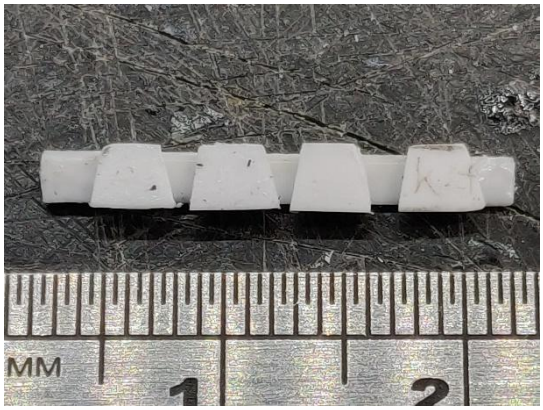
At the same time, examined the resprayed starboard hull side and disappointed to see large areas of shiny crackle effect showing through the paint. Probably the paint was too thick and applied over an uneven surface, and the remnants of gloss varnish must be showing through? Sanded back

hard and sanded the entire side with decreasing grits of sandpaper, cleaned out the paint from the scribed door outlines with a sharp point, then airbrushed Mr Aqueous Surfacer 1000 over the entire side. Seems to have worked well but the grey primer showed up some areas of deep pitting and scratches so went over those with a thick layer of Mr Dissolved Putty.

When dry, there were big cracks in the Mr Dissolved Putty similar to the crackling effect seen previously, including the shiny surfaces inside the cracks. Concluded that this cracking is in the Mr Surfacer products when applied thickly. Sanded back with 220-1000 grit sandpaper and sticks and resprayed a coat of Mr Aqueous Surfacer 1000. Mainly looked good but I could immediately see some areas of surviving pitting: the Mr Surfacer products seem quite soft and crumbly when sanding so it's probable that the sanding

dragged the filler out of the damaged areas. Added some more Mr Aqueous Surfacer 1000 to these areas by brush.

Duncan has (and always has had), at the top of the foremast, four Planar Array Antennas that are not present on the other ships[9], replacing the kit parts on port and starboard sides. They consist of a box on the mast side about 10/18ths of the width of the mast panels at the top, with another slimmer box fixed to the first which is about 1/2 the mast plane width and leans slightly back from true vertical on its face. Kit faces are 5.5mm wide at the top so that makes the widths 3mm and 2.75mm respectively. The front box is taller than the mounting box with sloped rear and a trapezium-shaped outer face (broader at the bottom). The one on the aft face is black.



Used the new guillotine to cut two strips of 1mm styrene sheet, one 2mm tall for the back part and the other 2.75 mm for the outer part. Fixed the back strip to scrap sprue with Extra Thin to form a handle and sanded the whole strip to the profile of the slope of the mast. Cut the other strip into trapezium shapes by using the guillotine set at a 10° angle. Holding each part in heavy locking tweezers, sanded each edge to the required profile, and the back to about the right angle. Aligning them against a ruler, glued on the rear strip to all four at once, trying to get the right orientation.

Sensors before trimming the tops

Cut them into four with a knife chisel blade – should have used the guillotine for square cuts. Cleaned up ready for fixing. Looking at photos, my pieces are too square – the trapeziums should be wider and not as tall. The 10° angle was probably too

[9] *HMS Duncan's mast is fitted with Planar Array Antennas for the CEC (Cooperative Engagement Capability) system, which was later abandoned by the UK, but the arrays remain.*

obtuse. Remedied by cutting off the protruding top part of each with the DSPIAE clippers – looks much more like the real thing.

At this point noticed a glaring error in the Airfix kit. The prominent ridge running around the top of the foremast should not exist[10]. Easily trimmed it off with the chisel blade and sanded, but of course spoiled the existing paint and varnish, so that will have to be re-done. Also trimmed off the three moulded ECM antenna clusters on each side of the mast to make way for the PE replacements, and marked their positions with a small hole.[11] Took the opportunity to sand some poor areas of the existing surfaces. The day when I can start assembling the ship seems to move ever further away.

Masked and re-sprayed the mast parts with all the various shades of grey. Seems successful. Also sprayed the four sensors for the mast top.

Airbrushed the black back face. The line of the ridge was still visible, so sanded it back and repainted.

Primed the radome in white. That showed up some uneven sections so sanded them again. Primed again. Finish is better.

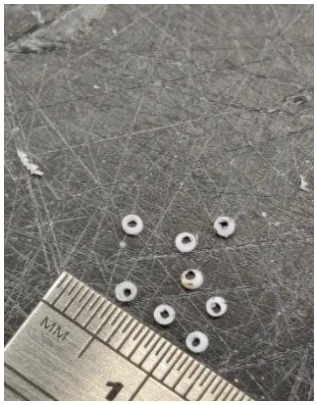
Repainted the hull starboard side. Yet again, after few days untouched, the shiny cracks showed through the paint in two places. Covered them with white Vallejo primer, then masked and resprayed the hull colour. Looked OK after

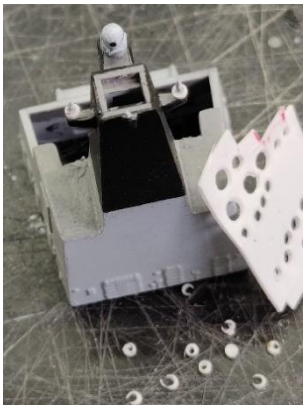
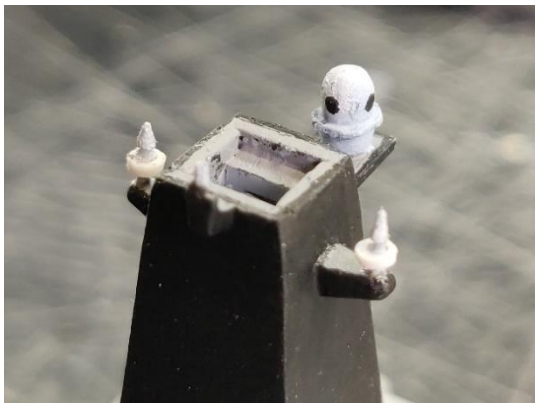
[10] Actually It exists (or existed) on HMS Daring, but even for that it is far too prominent – it is/was a flat piece of metal in the horizontal plane.

[11] I failed to notice that I should also have modified the Outfit UAT Mod 1 R-ESM receivers to the UAT Mod 2 by taking off the pyramids on all of them and adding boxes to the four in the diagonal positions. See page 100 for the later correction, which should also have been done at this point.

spraying. When dry, looks good apart from a bright, shiny vertical stripe about 2mm wide. I think I will just varnish over it.

I was never entirely happy with the absence of the horizontal rings on the pagoda antennas on the main mast, so decided to have another go by making plastic rings to fit over the brass parts. Drilled 0.9mm holes in 0.5mm styrene sheet then used a 1.5mm leather punch to cut the ring around the hole. Did a number and chose the best results. The holes needed stretching with a pointed tool but they then fitted snuggly and looked good. Secured with a drop of CA glue.



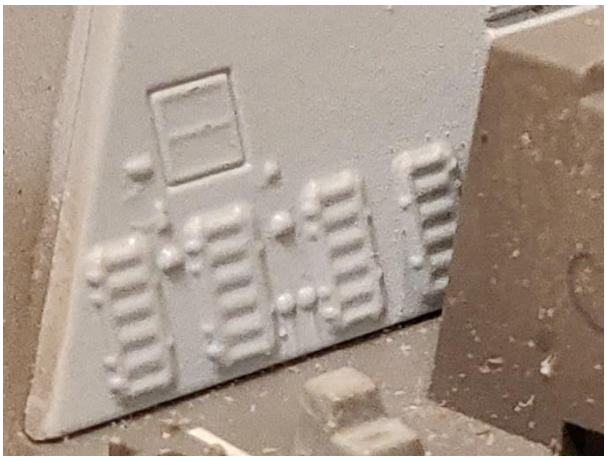



At this point I decided to re-watch Series 2 of *Warship: Life at Sea*, the Channel 5 documentary. I found that by viewing on the web, not through the app, on my Android phone, I could take screenshots, which are a goldmine of reference material on details. I had previously vaguely thought of depicting Duncan at the time of the first series (2017) but this persuaded me to opt for 2019, the time of her epic deployment to Syria, then the Black Sea, then the Gulf.

Further observations as result of these screenshots and the TV programme:

- There is a long, fine antenna on the back of the main uptake on the port side, protruding from a fitting on the bulkhead and angled out to port. Above its base, there is a square window or similar that is missing in the kit.
- Nearby, there is small gaff protruding left or left-down from the arm supporting the small antenna. From this line runs to the pair of boxes on the bulkhead. The left box is yellow.

- The square object the aft bulkhead of the main uptake on the starboard side is wooden-coloured, believed to be a ramp for goods access to the lift door opposite it.
- The doors on the kit all look wrong. In all the pictures, they look flat. Many but not all have a white metal wheel in the centre, and all have black dot, probably a window, centre top. Some have the outer (opening) top corner painted red, as I did in the hangar. The kit type are probably only on HMS Daring.



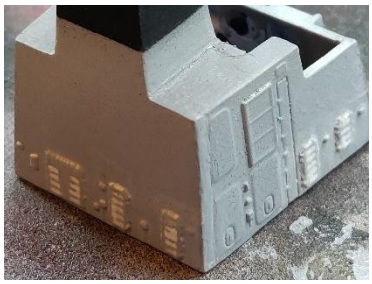
- Duncan mounted .50 cal machine guns on the bridge wings in 2019, though GPMGs appear in other shots.
- The shell casing chute, previously observed on Mk8 Mod1 turrets, is definitely there but missing in the kit (but approximated on the Atlantic one).
- There is a big eight-barrelled Ultra Maritime Sea Sentor (Sonar 2170) Expendable Acoustic Device torpedo defence decoy launcher on a hexagonal back just forward of each Phalanx, in place of the kit life raft.
- Duncan has the “spike” and “bell” and small black antenna (with square base set diagonally) on the bulkhead top above the hangar door. The “spike” and “bell” are central on the thickness of the bulkhead, not on the edge like other fittings. The central blob above the hangar door is black.
- Duncan no longer had the frame on the bulkhead to the left of the hangar door. The hangar bulkhead as I have done it looks very faithful to the original.
- On the starboard side only, there is platform with a railing (two bays) beneath the second box/grille on the side of the foremast block. Sometimes, but not always, there is vertical ladder leading to his platform from the MCG sponson.

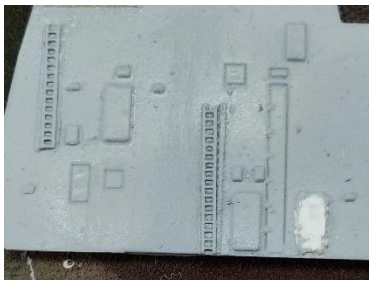
- Above this, on the deck behind the foremast, are two “picnic box” objects, angled towards the quarters. They look like boxes with handles but view from the side looks as if they are just flat front and top, perhaps with a tube in the middle and something red leaning on it.

Added the small square observed on the back bulkhead of the main uptake, port side, and painted it (black square in centre). Painted another little box yellow per photos. Painted the wooden ramp in various wood shades for an uneven look.

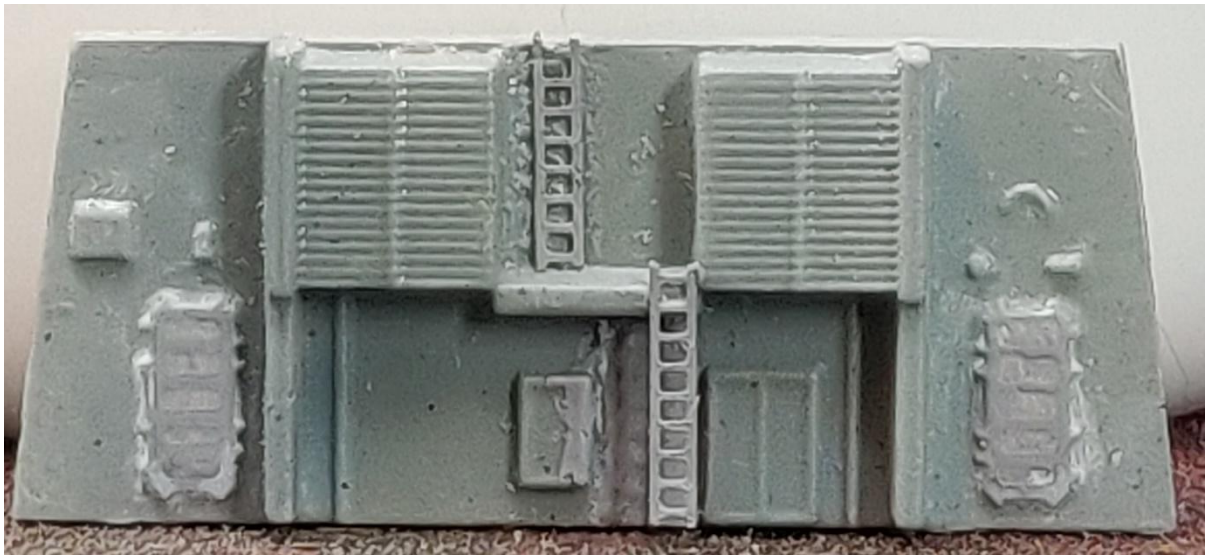
Experimented with stretching sprue to make the large “spike” 10m HF whip antennas, with no success.

Followed up my observation about flat doors with looking at more photos and a question in a Facebook group. It seems Daring was fitted with the dimpled Ansell Jones doors, but the rest of the ships got McGeogh flat doors. A bit concerned that Airfix shows a few of the flat doors on the model, but decided to flatten all the doors (except the hangar and boat bays, where it’s too late). Filled the dimples with Perfect Plastic Putty, sanded down with narrow sanding sticks when dry, and coated with Mr Aqueous Surfacer 1000. Some will need another application of filler.





Painted the scratch-built trapezium sensors I made earlier (one in black) and glued them to the foremast parts, right at the top.



Scraped off the small, moulded ladders I missed earlier on the two similar aft-facing bulkhead parts. Where the lower ladder goes up to a small platform, the ladder should be at the platform edge, not flush to the bulkhead, so did that.

April 2023

Applied two coats of VMS gloss varnish to all the parts ahead of decals and pinwash. Still not getting satisfactory airbrushing of varnish. Lots of tip dry and varnish drying matt, probably drying in the airstream from the airbrush. Not at all happy with the varnish finish – thick glossy areas need sanding back, uneven finish, matt areas.

Negligible progress this month due to other commitments.

May 2023

Added the decals to the medium-calibre gun positions, with Micro Sol. Added the rings around the guns, noting that they do not seem to be entirely symmetrical fore and aft. Just after adding the straight decals across the wing thresholds, looked at an aerial picture of Duncan and noticed she doesn't have these, so removed them using Micros Sol. Instead, she has diagonal yellow lines across to the corner of the main mast block. Added that from the Atlantic RN lines decal set, though it is very pale yellow and should be brighter gold. Decided to replace it using instead the yellow lines decals I bought for my locomotive model. Also, looking at the aerial photos, Duncan doesn't have the dog-leg white lines at the aft end of 01 Deck. Painted them out. Noticed that the RAS capstan covers (the "steps" objects) at the aft end of 01 Deck are too

far forward, at least for Duncan: they should be immediately inboard of the life raft racks. Scraped them off with a chisel blade, sanded and painted by brush; thinning with flow improver seems to help coverage. Kit parts may be a bit thick?

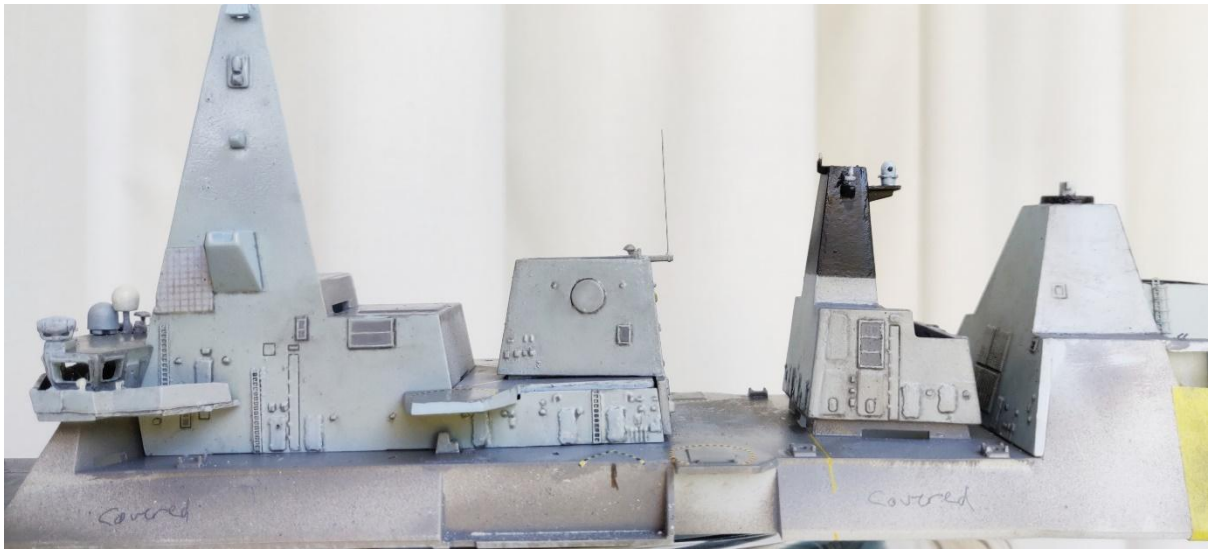
Duncan has yellow lines square across the deck instead of the dog-leg white lines of the kit decals. On the aerial photos, 2014, they are in a similar position, but in later pictures they have moved forward to be square with the forward end of the mainmast block. That is where I will put them – confirmed by a 2019 picture.

The hexagonal Sonar 2170 multi-barrel torpedo decoy launcher replaces a life raft rack. Yellow dashed lines at 45° either side. Scraped off the life raft base from the weather deck between the 30mm and CIWS guns. Sanded and painted deck. Mr Surfacer to fill in some scratches due to use of a file. Painted again.

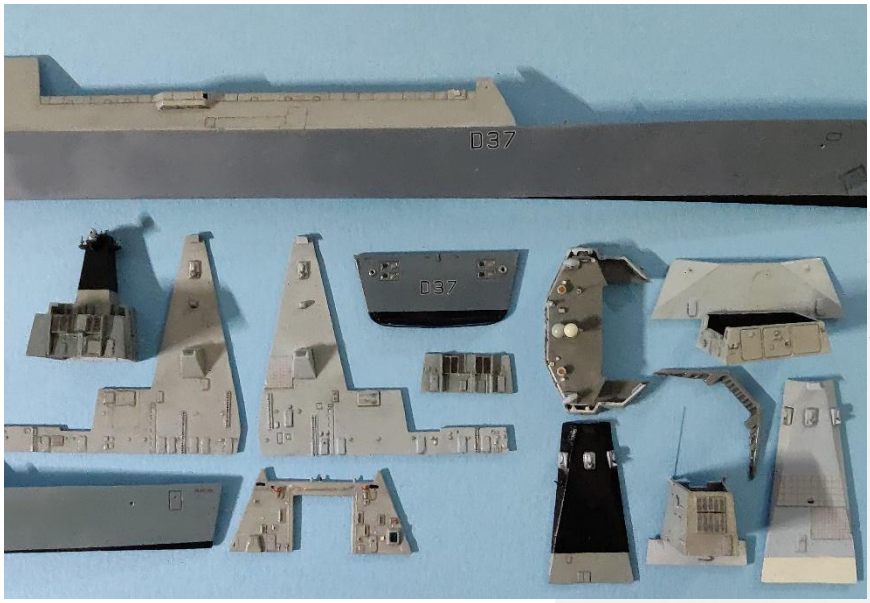
Added the deck stripe decals using the gold-yellow stripes I had in stock, across the weather deck either side of the mainmast and diagonally across the deck behind the medium-calibre gun positions, and Atlantic decal dashed lines at right angles to form a triangle where the torpedo decoy launchers will go. On Facebook, I found out that Trumpeter include these launchers in their Type 23 kit. Added the Airfix D37 and name decals to the hull sides and transom. In all cases used plenty of Micro Sol and then costed with Micro Set. The Atlantic decals are disappointing, the dashes printed slightly out of register and the yellow too pale.

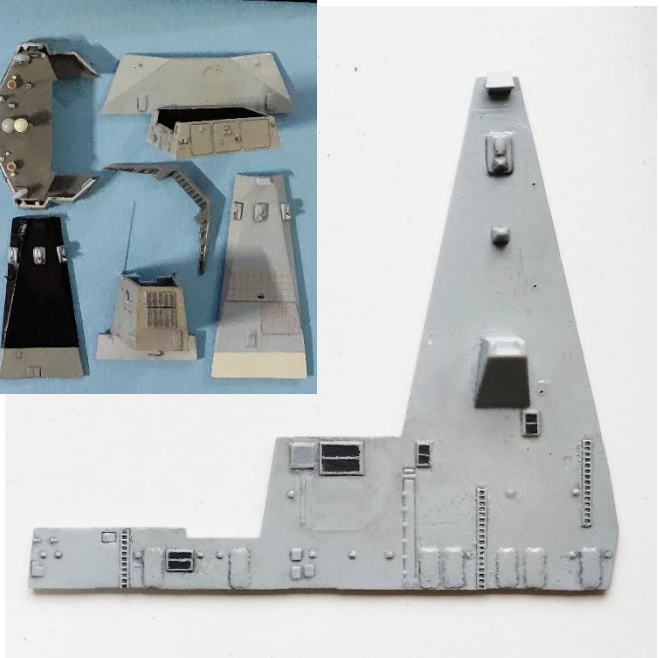
Someone on Facebook promised to send me (from Canada!) the hexagonal Sonar 2170 torpedo decoy launcher left over from their Trumpeter kit.

All eight remaining life raft racks are doubles on Duncan. The inner life raft is higher than the outer. Life rafts rest with the cannister join horizontal on sloping metal supports and wood-coloured rails. Bulwarks fold down for launch.



Pin washed the doors and other details, only on the shaded sides for those in the sun. Abandoned the AK Wash for Grey Decks – it is almost black, too dark for pin washing. Instead used oil paint mixed to a couple of different grey shades, thinned to a wash.





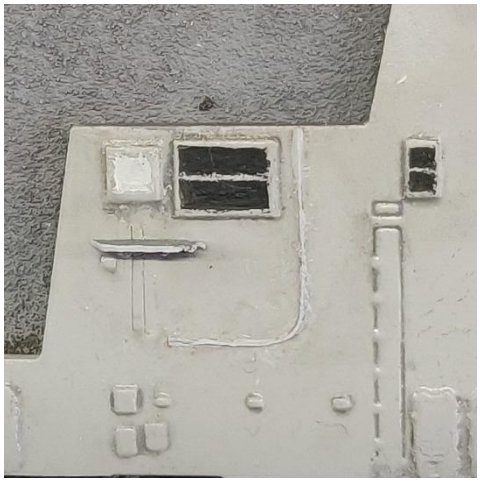
The wash did not take on the vents on the sides of the superstructure (no texture to hold the wash on the gloss varnish) so painted them in in dark grey – very dark on the shaded side of the ship. Found that the best way to do neat frames and crossbars is to paint and then scrape off the paint on the frame with a knife – allows sharp corners and very fine crossbars. Also works for the main air intakes, previously pin

washed, to show the structure more clearly. The gloss varnish helps to avoid scraping off the paint underneath.

Noticed, after all this time, that the walkways either side of the mainmast are hull coloured, not deck colour. Repainted. There is a black circle (opening?) at the aft end on the port side only which I painted black, masked with a circle of tape cut with a leather punch, then painted over in deck colour (Ocean Grey) by brush.

After pin wash, before painting in the vents

There are three vents in the transom, large square top left and two smaller vertical either side of the flag gaff fitting (but not symmetrical). On inspection they are lightly indicated on the kit part. Painted them a slightly contrasting grey.



Made the small platform to go on the starboard side above the MCG position. Difficult to ascertain from photos but went for thin styrene sheet 6mm wide, tapering to 4.5mm at the outer edge (both sides seem to angle back) and 1.75mm deep. Made four fine strips to styrene and glued on to represent the supporting brackets. Painted deck colour with hull colour edges. Fixed in place with slow superglue.

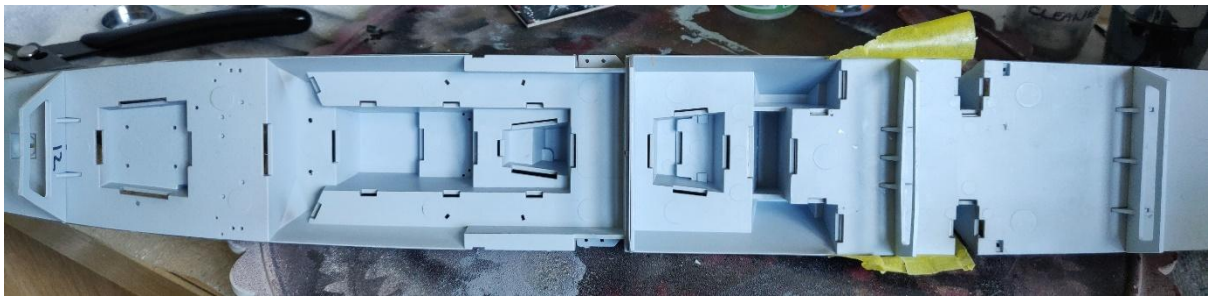
With the same glue, stuck 0.1mm pre-primed wire over the kit's vague representation of the J-shaped pipe or cable near the platform on the starboard side. Painted a highlight colour. Much better.

Sprayed the hull bottom black – no need to do the red as it is below waterline. Using the Dremel mounted vertically with a cutting disc horizontal, inverted the ship's bottom on the drill holder base and cut it down to about 5mm depth all round – not entirely successful due to my inexperience and lack of knowledge of the right tools and speed, so some of the plastic melted and the cut is fairly irregular, but it won't matter – I will just have to spray it again because of the damage.

Finally ready, I think, to start assembling the hull of the ship.

Glued together the two hull halves together with Extra Thin, holding them together with tape. Had to drill out the locating holes for the pins. By fixing this first I hoped to achieve a neat, close join but there is still a gap that will need filling.

Glued the four hull braces to the bottom of deck. As usual the parts did not fit the locating slots and had to be adjusted.



Dry-fitted the deck – this is starting to look like a ship!

Realised that the hull braces need to fit into slots between protrusions on the hull sides – but are too thick to fit. Ideally would have been adjusted before I started glueing.

Then realised that I had not finished the hawse-holes, which I should have done before joining the hull halves. Re-drilled out the holes with a 0.7mm drill, as they have become blocked up with paint. Inserted the pre-painted plugs of plastic rod I made earlier, with some difficulty, and tapped them home with a hammer. In the course of this operation, the two halves of the hull fell apart. That made it easier to check the slots for the hull braces – only the forward ones seriously needed widening.

Assembling the hull

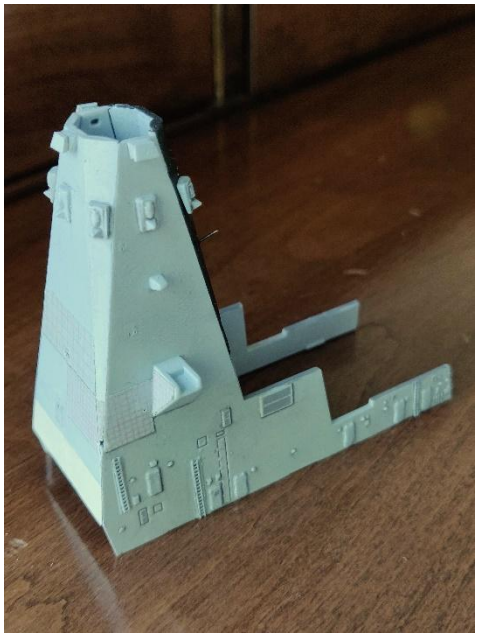
Started by re-gluing the two hull side parts at the bow – possibly a tighter joint than before. Then fitted the deck, checked the fit of the braces, and began gluing, applying Extra Thin from inside the hull with a paintbrush, working from the bow in sections. Once the bow deck section was fixed, switched to fixing the flight deck – in retrospect it would probably have been better to continue working aftward. The mid sections took some force to get them into the correct place, and were hard to hold while the cement cured, and required some CA to fix them. On the starboard side a variation of up to 1mm emerged, most noticeable at the finial above the hangar door, where three parts meet to form the finial – it took considerable force from a pair of pliers to get the side and deck parts to match correctly, and even then there is insufficient thickness to fit the hangar aft bulkhead neatly. There are small gaps all around the deck that will need to be filled, and significant surgery (or addition) may be needed where edges of the plastic parts show, especially at those finials and nearby deck features. More re-painting will be needed, showing the folly of attempting to paint before assembly.

On the plus side, it's great to have something resembling a ship and it fits neatly onto the cut-down bottom piece, giving it more of the stature of the real thing. Glued the bottom piece on, applying copious Tamiya Extra Thin from inside – not entirely straightforward due to the part's flexibility and lack of positive fit, but a reasonable result –a short section has not bonded, and an adjoining section could do with being separated and refixed to remove a small ledge. A pale line is visible along much of the join that will need to be painted.

D37

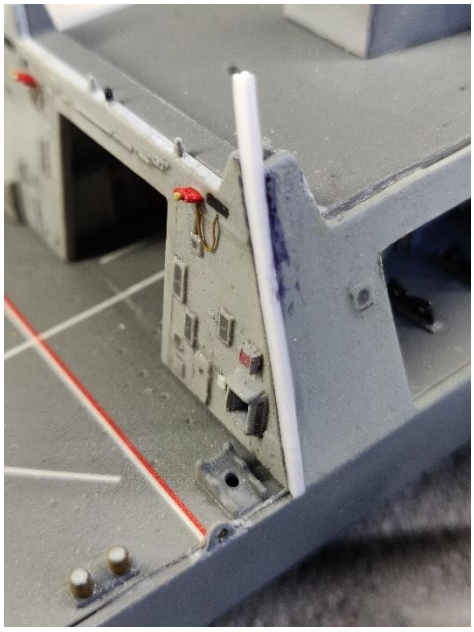
D37

June 2023



Removed the tabs from the foremast parts to keep the mast removable when dry-fitted. Glued the four sides of the foremast together, again by applying Extra thin from inside, carefully trying to keep exact alignment and avoid repainting or filling. Used the deck part as a former to keep it square. Allowed time for each joint to dry before going for the next. Complete success, except that I used tape to align the rear face and some glue leached through the join and under the tape onto the surface. The top alignment is not perfect and may need sanding down to fit the dome.

Noticed that the scratch-built sensor at the top of the aft (black) face of the foremast has been lost. I replace it later.



Added a fillet of 1mm styrene sheet to the starboard corner of the hangar to fill the mismatch of the hull side part and the deck part and hangar bulkhead part. Went in neatly. Used the surplus length to do the same with the short vertical further forward on the hangar roof. Chiselled back one deck block to match the hull side profile.

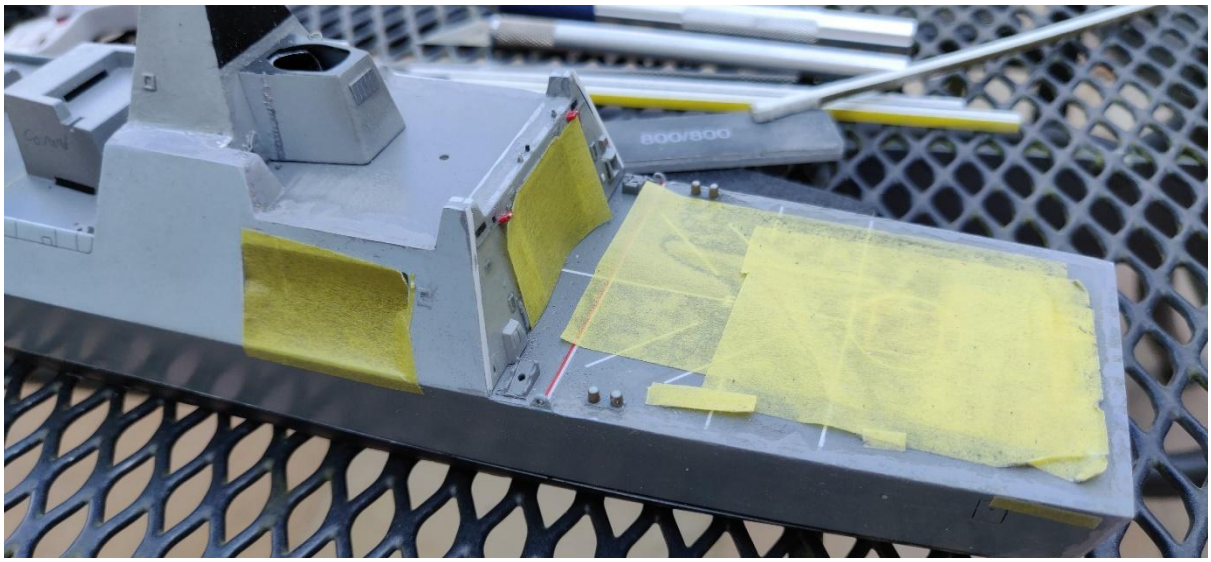
Found that the hull sides had not stuck well to the deck and superstructure part long the middle section, especially the hangar area. Made many attempts to get these fixed without leaving gaps, using CA glue – very frustrating. Eventually, by using clamps and allowing each joint to dry before doing the next, I managed to get them fixed, at the cost of spillages of CA glue on the deck close to the side rails. Used lumps of Blu-Tack on the clamp to prevent the jaws slipping off angled surfaces.

Noticed that a clamp had left a large grid imprint in the surface of the hull side where the paint or varnish must have stayed soft – sanded it back, but yet another repaint job!

The hull and weather decks - tribulations

Fixed the transom in place. Filled the gaps all around the deck part where it meets the hull sides, and around the transom and all around the hangar, plus the strange voids near the CIWS mounts, with AK grey putty. Found I had to use a lot of putty and several applications to get all the gaps filled, and all attempts to smooth it during application failed – it is too sticky, and also shrinks into the gap when drying if smoothed when wet. So very ugly surplus putty all round. Further confirmation of the folly of trying to paint these parts before assembly – decks and hull sides will have to be repainted, at least in part.

Matt varnished over the latest decals to protect them. When dry, covered decals near the filled areas in masking tape and began the sanding operation, mainly using 80, 180, 400 and 800 grit sanding sticks. After a great deal of effort and some re-filling of pitted areas with AK putty or Mr Dissolved Putty, got to an apparently satisfactory result. One side of the transom protruded significantly and had to be sanded back. Repainting will tell. The ends of the white lines on the flight deck will need to be painted to the deck edges. Mr Dissolved Putty again dried with deep cracks in it.



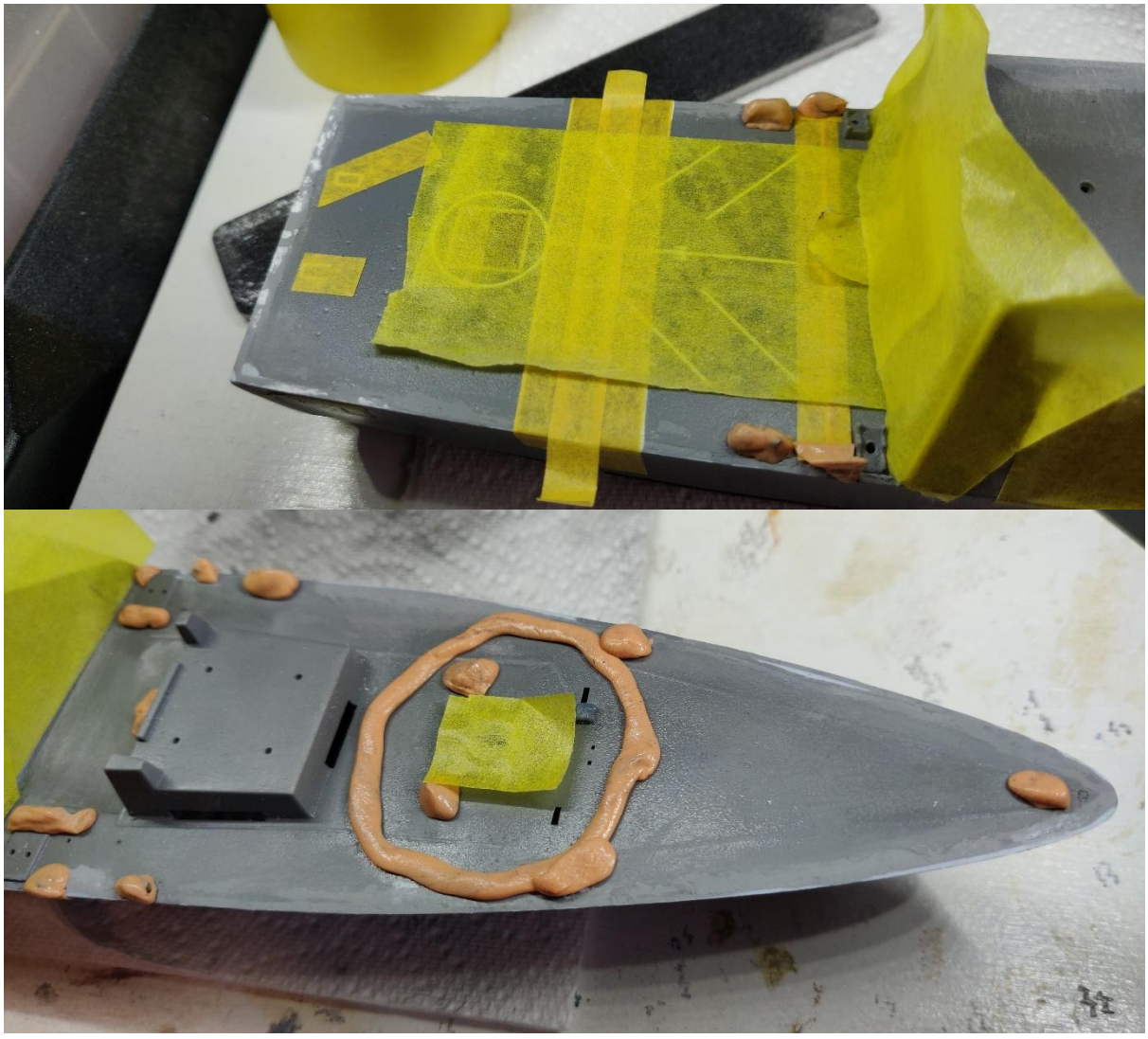
Filled some remaining pits in the filler with Perfect Plastic Putty. Much easier to work with because it isn't sticky and can be smoothed with water. Wish I

had used that for the main gap filling. Sanded down. Hand-painted the ends of the white lines on the flight deck out to the deck edges with a 10/100 liner brush. Roughly touched up the black ship's bottom and boot topping, mainly the join between bottom and hull side parts and the filled and sanded prow, but including making sure the boot topping matched on the joined parts. Also touched up the black base for the long-range radar.

Filled some more minor pits with Aqueous Mr Surfacer 1000 and sanded again.

July 2023

Masked all the deck details and the decals on deck and ship's sides with tape and Silly Putty. In the course of doing this, knocked off and lost one of the intricately-made conical antennas from the mainmast unit! I could cry. It will have to be re-made.



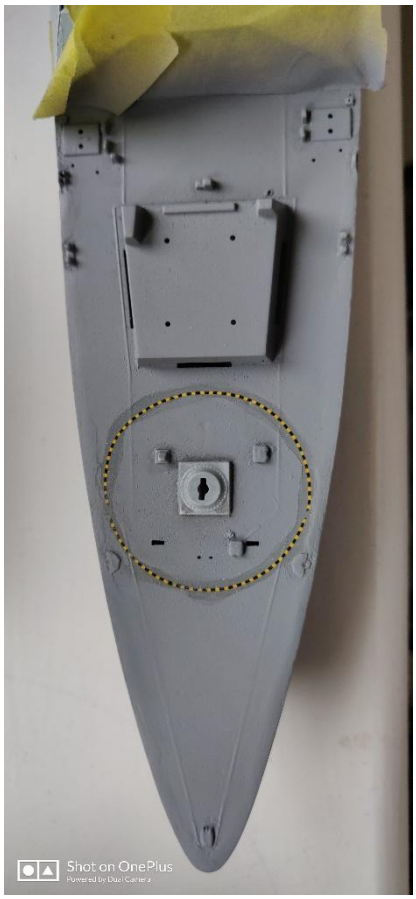
Sprayed the deck, using the .15 needle for my airbrush for the first time. It clogged just as much as the .40 even on first use.

When dry, the paint coat revealed yet more pits, uneven surfaces and visible edges. Perhaps more disturbing, the new paint does not match what is underneath (which has been gloss varnished) so the masking tape edges are visible. This is never-ending. Hope the final matt varnish will hide the differences in deck tones.

Filled more pitting with Perfect Plastic Putty and smoothed with a wet finger. More sanding and filling of the weather decks and also the ship's sides. In the process, decided to abandon hope of preserving the earlier paintwork on the ship's sides and went for smooth finish, including filling and sanding the join with the ship's bottom part, in the black boot topping area.

August 2023

After some weeks of very little progress, partly due to lack of motivation due the tedious sanding and the loss of the precious antenna, finally got the surfaces sanded to what looked and felt like a satisfactory smoothness. Airbrushed the weather decks with the .15 needle. This time the thinning must have been better as it worked with only minor tip dry and clogging. Pleased with the results, though another coat will be necessary. Removing the masking tape and putty reveals some obvious edges. Airbrushed as close to the flight deck decals as I dared – some white lines will need touching in. Sanded around other clear edges – hopefully masking different lines for the second (third? eighth?) coat will hide the joins. Silly Putty probably better than tape, to avoid straight lines.



After a little more filling and sanding and another coat of paint, finally happy with the finish of the decks – praying that a matt coat later will hide the remaining halos around the decals. In the course of spraying, gave up on masking the painted deck details – decided to repaint them later.

Touched up the flight deck lines with a fine brush, in Insignia White.

Masked around and airbrushed the filled areas of the aft mast front bulkhead. Unsatisfactory results with clear line showing the join, so ended up brush painting most of the surface. Brush marks showing so will probably have to be re-done.

Adding white to the airbrush cup, re-sprayed the walkway area either side of the aft mast and mainmast, which should be highlighted hull colour, not weather deck grey. At the same time sprayed the top edges of the missile silo wall with the highlight colour. Very pleased with this highlighting – the near-white gives the contrast I want but without looking too different.

Painted on the black circle on the walkway to the port side of the aft mast, by cutting hole in masking tape using a 1.5mm leather punch and black paint by brush. Edges slightly ragged.

Repainted the hull on both sides, masking the decals, details and upperworks, using tape or Silly Putty. Thinned the paint with the previously-recommended mix of thinner, flow improver and retarder. The results looked good immediately after application, but on close inspection after the paint cured, the reticulated cracks had appeared again, showing as shiny lines between

areas of matt paint.

I regained some of my confidence after respraying, this time with paint unthinned, apart from a couple of drops of flow improver in the airbrush cup. Didn't have too much trouble with tip dry and clogging - back flushing kept it flowing. The port side, where I had the problem before, covered quite well, although there are traces of the cracks showing through as texture. The starboard side never got the thinned coats - and now it's dry, it's also cracked! So it's not over-thinned paint!

The very worst small area, below the ship's name on the port quarter, I first treated with Mr Aqueous Surfacer 1000 and filled a small gap (where the transom part meets the hull side) with Perfect Plastic Putty, then sanded. Resprayed the whole hull again, with around three light coats of unthinned paint, apart from a drop of flow improver in the airbrush cup. Pretty happy with the result so far. The pictures below are after about 90 minutes curing time - hope the cracks don't reappear with further curing.

The above is the worst-looking part after 90 minutes, with the cracks showing under the new paint - it's fairly clear they have texture. They look worse in the magnified photo but I may try to fill and repaint if the rest remains smooth. I'm unsure how fussy to be when matt varnish might hide remaining issues.

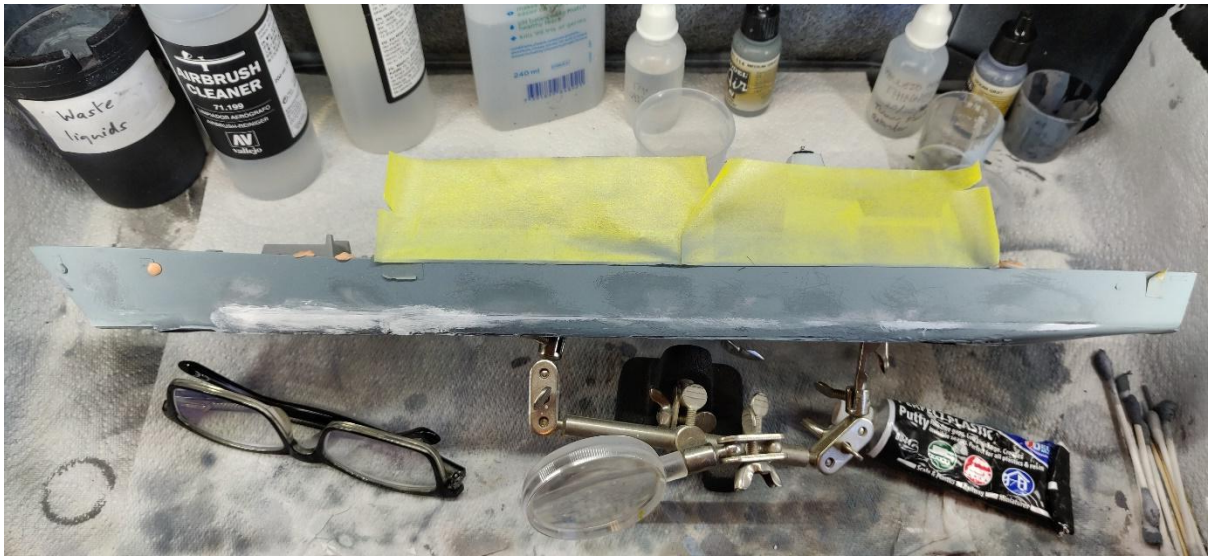
I decided to cover the scratched areas on the starboard bow with Mr Aqueous Surfacer 1000, at the same time treating the port quarter where the filler around the transom join still showed.

Sanded back the filling with increasing grits of sandpaper to a smooth surface again.

Re-sprayed the starboard side hull, and finally got a smooth and apparently enduring surface all along, apart from a small patch of visible filler at the transom join. But by this time, small cracks had started to show again all along the port side. My theories as to cause are chemical reaction with one of the underlying layers, probably VMS varnish (answer advocated online on

Facebook but that I consider unlikely, given the numerous recoats and sand-backs), temperature expansion-contraction or flexing through handling.

I might have been able to cover these cracks with paint, but exploring them with a sharp point, they definitely had depth and texture that could survive painting, so decided to do a proper job and sand them all away. Methodically sanded back using successively smaller grits, beginning with 120. Filled in the worst gaps and steps at the hull bottom join and sanded those too – they should hardly show when painted black and hidden amongst the seascape, but no point taking the risk.



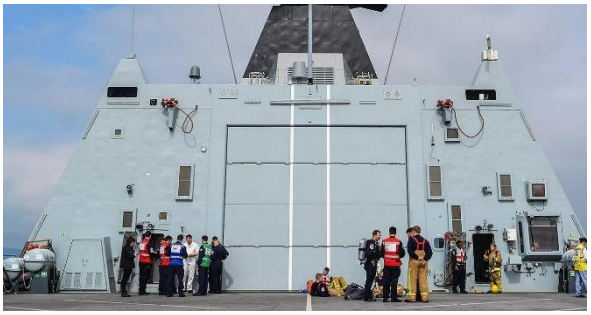
To avoid excessive handling, I mounted the model in an ancient “helping hands” tool – the two clips hold it adequately and it gives a great deal of flexibility of angle for working.

Hangar repairs

At the same time as dealing with the cracks in the hull paintwork (above) decided to deal with the visible filler irregularities on the hangar roof. I treated them with Mr Aqueous Surfacer 1000 and some Perfect Plastic Putty for deeper pits. Filled some remaining visible joins and pits around the ship, particularly the “horns” and low wall above the hangar door, also filling the gaps at the sides or the main hangar bulkhead.

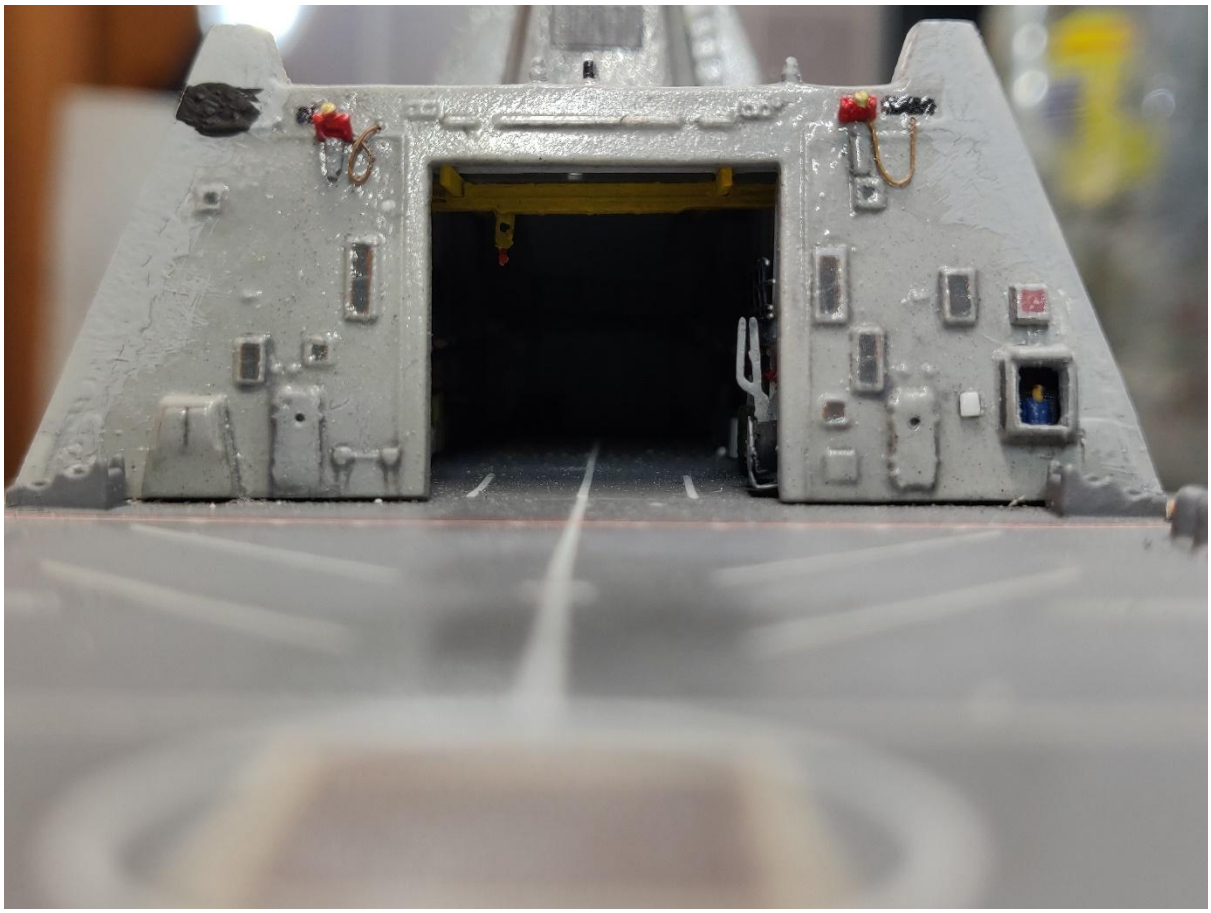
Brush painted the white edges of the styrene I added to form the sides of the aft hangar bulkhead. It is evident that I will need to fill the gaps – tricky around the existing details and paintwork.

Replaced one of the brass-painted nozzles of the firefighting foam sprayers that had been knocked off – used scrap styrene rod of the right diameter, cut



five pieces to use the best, and rolled them repeatedly in brass paint – the styrene was very resistant to taking the paint and should have been primed.

Again brush painted over the filler. Joins are now satisfactorily hidden. Started to re-paint the port side black window further outboard, but did not achieve a neat result so painted a black patch to be masked later.

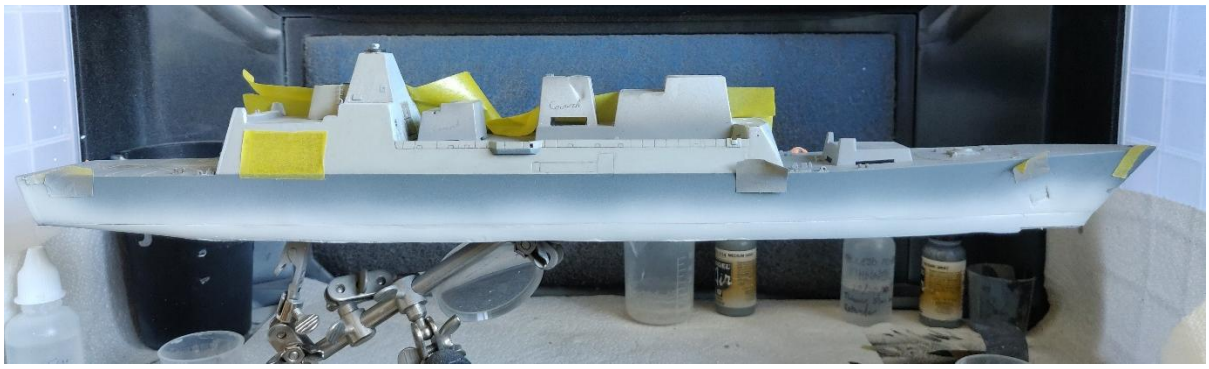


The black window top left needs to be repainted closer to the edge, and wire added to create the lines on the edges of the bulkhead.

September 2023

Hull tribulations continued

Having filled and sanded back on both sides of the hull, I will have to repaint most of both sides. Final sanding was wet sanding with 400 and 800 grit paper. Airbrushed white Vallejo Surface Primer over all the sanded areas.



So far so good. The finish looks smooth except in the rough areas around the waterline, that I am hoping will not show in the seascape.

On close inspection through a magnifier, there were still small scratches visible, mostly above the line of the new primer on the port side. Decided to fill these with Perfect Plastic Putty[12] in case they showed through the next coat. Covered them and removed surplus with a wet cotton bud. As usual I got carried away, and also filled most of the waterline join on both sides, that I was trying to ignore. Did not smooth down much with water, as I was afraid of removing the filler where it was needed. More sanding and priming ahead.

The filler easily sanded down and after sanding the whole of both hull sides with reducing grits down to 1200, resprayed with Vallejo white Surface Primer. Pleased with the smooth finish resulting – at least above the waterline. Below it is still quite rough, but shouldn't matter.

[12] A new tube – incredible difference in texture, as the old one was virtually solid.

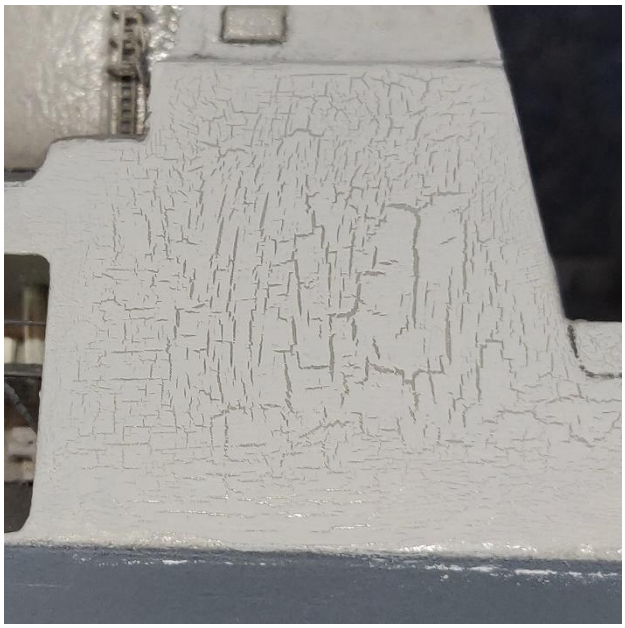
But I've been too casual with my masking: the primer has got under the tape and got onto the decals, or very close to them. Sanded with 800 grit to remove any edges around the decals and as much primer as I can get off; also carefully scratched away primer with knife blade to clean up and give a margin around the decals. Masked up again on the port side and tried to spray – completely frustrated by airbrush clogging.

Very grateful to a fellow modeller on the Royal Navy Model Ships Facebook group who sent me replacement decals for the pennant numbers on the hull sides, and to another on the Airbrushing for Scale Artists group who patiently took me through lot of steps to diagnose my airbrushing problems and improve technique. I have concluded that in the medium term I should move away from the temperamental Vallejo paints to something more forgiving, probably AK 3G paints.

After those experiments, I managed to get on very smooth coat of the starboard lower hull colour. It still has the odd blemish and I need to paint over the old pennant number decal, so another coat will be needed, but overall, I am pleased with the result.

October 2023

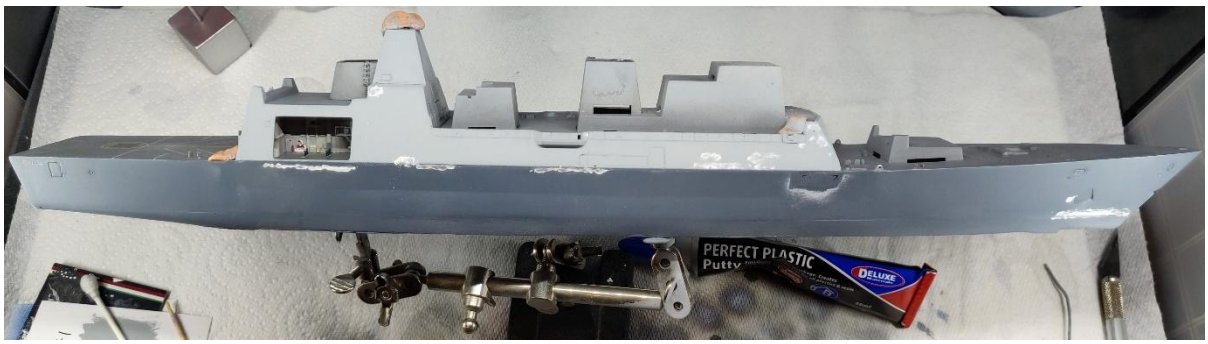
I decided that the dirt, varnish and lumps on the starboard upper hull side could not be tolerated, and would have to be repainted despite the earlier successful pinwashing. After some attempts to paint around the pinwashing by hand, I decided the whole surface would have to be repainted and the pinwashing redone. For no good reason, I repainted the whole surface by brush, using unthinned Model Air/Game Air paint. After application, it looked OK for base coat.



By the following day, the dreaded crackle effect was there in spades. I am incredibly frustrated. So this crackle effect is nothing to do with thinning of the paint. Most likely it is due to attempting to paint it over glossy surface, such as the previous gloss varnish. The Vallejo paint seems not to grip the gloss surface.

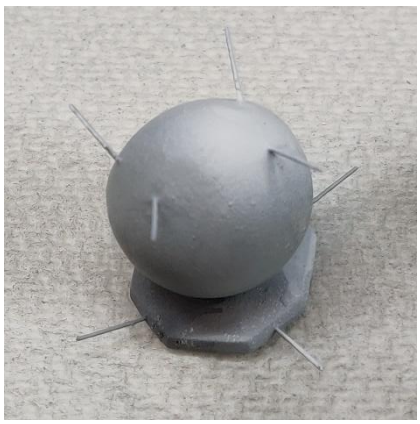
I lightly sanded the crackles and successfully sprayed a good coat over the whole hull side, but the crackles are still visible under it, some emerging as cracks in the new coat when it is dry. At this point I got frustrated and didn't touch the model for a couple of weeks. I have been bogged down in painting the hull for months, no nearer finishing the model than I was a long time ago. I really want to move on.

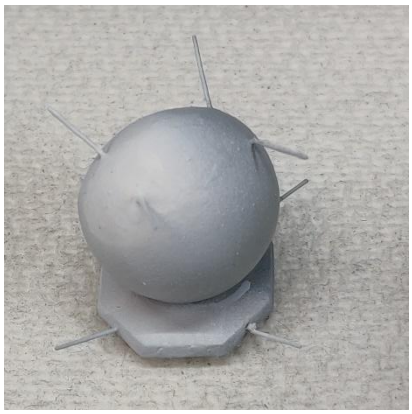
The crackles have a distinct texture to them, surprising if they are just in the thickness of the topcoat, but I can feel the cracks the point of knife. I painted



over the crackles (including on the forward bulkhead of the aft mast) with Mr Surfacer 1000, sanded back with successive grits of sandpaper and resprayed again. This was largely successful, but some small crackles remained visible in places under the paint, though mostly without the glossy surface showing through. This time used Perfect Plastic Putty to fill the cracks. At the same time filled some cracks and irregularities in the lower hull, which is going to have to be resprayed anyway.

Took a break from the hull and had a go at painting the Sampson dome with shading, using colours from -5 Ocean Grey to +4 near-white in 2-step increments, marking the point facing the sun with blob of putty and trying to hold the dome in a crocodile clip with the sun point directly upward, so I could spin the clip to spray all round from the required angles, working from dark to light. Reasonably pleased with the result, though the shades are not entirely even.





Returning to the hull, I sanded down the putty and resprayed the starboard upper hull. This was largely successful but there were some remaining small cracks after the paint had dried. I again filed these with Perfect Plastic Putty, thinned with water. Once dry, I sanded and repainted again. A new technique: I stuffed the boat bay with cotton wool as a masking material, so that I could spray right up to the edges of the aperture without damaging the painted interior. It worked well, except that some fibres adhered the paint and had to be carefully removed with tweezers.

I also resprayed the forward bulkhead of the aft mast, previously sanded and primed, and the bulkhead below the bridge, which had become mucky, both in Wolf Grey (shade +1) … and (after curing) the crackling is back, in the central areas of both the bulkheads! This is still mysterious: the substrate is different for the two areas. The bridge bulkhead was gloss-coated but sanded back; the aft mast bulkhead had been thoroughly covered with Mr Aqueous Surfacer 1000 and sanded smooth. The concentration of the crackles in the middle of each area makes me wonder if there is something about the paint or technique that causes tension across the whole area as the paint dries. The cracks seem quite deep – am I painting too thickly? I am trying to use thin coats and allow drying time between coats.

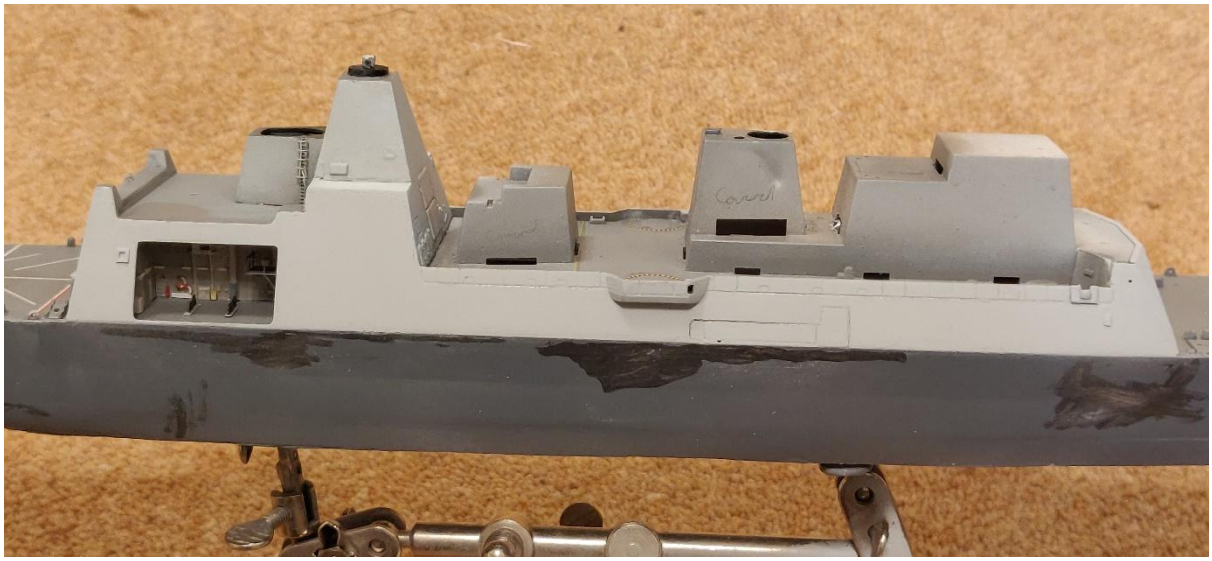
Lightly sanded and put thin layer of Perfect Plastic Putty over the crackled areas. Once dry, sanded back and repainted … and … cracks again! I despair. The inside of the cracks is shiny again, and I think the drying of the topcoat, however thin, must be pulling apart all the other coats overlying the gloss varnish underneath.

The cracks are only small this time. Touched them in with Vallejo primer with a brush, hoping it will grip the exposed glossy surface within the cracks. At the same time painted a primer coat over the exposed white filler on the starboard hull side, which is still awaiting another paint coat.

Airbrushed the bulkheads again. Two big cracks in the bridge bulkhead showed through, so I recklessly filled them with Perfect Plastic Putty and resprayed. Looking good immediately after painting, though some residual cracks showing that I filled again, and the dark primer still showing though, so will need another coat. Filled scratches again and recoated – looks OK, if a little irregular over the filler, but I am not going to interfere further. Resprayed the weather decks immediately in front of these bulkheads, which had been contaminated by Wolf Grey paint leaching under the masking tape and reflecting off the surface.

Inspected the starboard upper hull side. Acceptable finish except immediately under the bridge wing and above the boat bay. Lightly sanded the surfaces here. Made the replacement vent to the left of the boat bay (I had previously marked its position by scoring with a knife before the site was repainted) by cutting a 2x2.5mm rectangle of 0.3mm styrene sheet and cutting a square hole in the middle with an X-Acto knife, sanded it to remove sharp corners, and glued it with MIG Ultra Glue. It will need further sanding to reduce its prominence. Did the same with the small rectangle below the bridge. Filled some cracks above the boat bay.

Sanded the added parts on the upper hull side to bled them in – in retrospect I should have done this more aggressively – and spayed. At last I have a starboard upper hull and forward-facing bulkheads I am happy with!



But some over-wet paint ran on to the hangar roof … tried to re-paint it with brush, but as before, the brush painted area won't blend with the airbrushed surface, appearing shinier. That could well disappear under matt varnish, so I might leave it.

The detail in four large vents on the forward bulkhead of the aft mast has become clogged with all the paint layers, so I decided to strip all the paint from them. I carefully applied VMS Clean Slate 3 with a small, short-haired brush that could scrub the surface. This worked well, but the residue containing paint stripper did get on the surrounding surfaces and damage the surrounding paint on the bulkhead. To remove the residue I used larger brushes, including one wet with water to neutralise the stripper.

Painted the vents Sea Grey and then, when dry, dry brushed with Wolf Grey to show the grilles. Very pleased with the result. Tidied up the frames and surrounds with a brush in Wolf Grey – pleased to see that the brushed paint did blend with the surrounding airbrushed surface. From the photo, I noticed some paint on the lower grilles, so I re-did the process the neaten them up.

Masked and re-sprayed the lower starboard hull. Looking good immediately after spraying, with no leaks under the masking tape. No cracks by the following day! Perfect. Until, in cleaning the airbrush, I managed to get two splashes of something on the new paintwork! Painted them out with Sea Grey by brush, but a difference in shine was visible, so fired up the airbrush again and painted them out.

Repainted the triangular panels at the corners of the bulkhead below the bridge in the correct highlight and shadow colours.

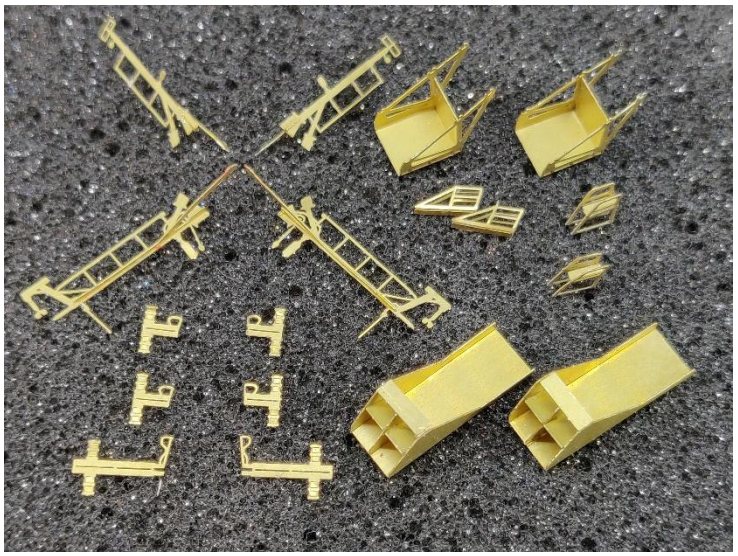
Time to gloss and re-pinwash the starboard upper hull side, the forward bulkhead of the aft mast and the bulkhead below the bridge, all of which have now lost their shaded details, and to gloss the site of the replacement pennant number on the starboard hull side. But I should let the paint cure fully first.

November 2023

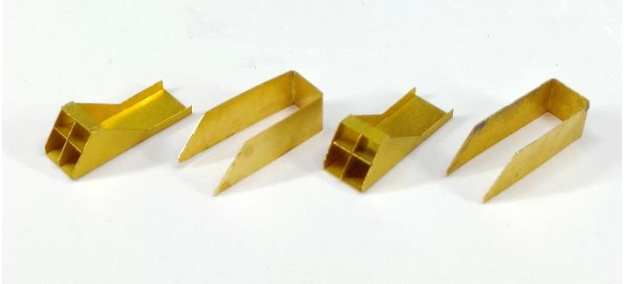
Sprayed VMS gloss varnish on the areas needing to be re-pinwashed and the decal site on the hull.

Photoetch details

Whilst waiting for the varnish to cure, I began building the PE yardarms and antennas for the foremast. At the same time I decided to do the Harpoon launcher frames and blast deflectors and the life ring ejectors. Cut out the parts with snips and knife, cleaned up with diamond files and folded in the PE folder. Few problems, though the top braces of the blast deflectors (later to be removed as inaccurate anyway) both broke off in the folder for no obvious reason. The larger ejectors were very delicate, held together by one point on each side that needed to be twisted – I used a thick piece of styrene sheet as a former so I could grip both sides of the frame in pliers while the floor was folded down over the former. Glued all the parts with VMS CA. Apart from railings and GPMGs, those are all the remaining PE parts for the ship itself, as opposed to the helicopters and boats. A satisfying day. It's good to be building again after so long struggling with paint finishes.



The Harpoon blast deflectors (both the kit parts and the WEM photo etch) look wrong when compared to photos. They are of a kind used on the Type 23 but not the Type 45, or certainly not HMS Duncan. The actual type are taller, open-topped rectangular boxes with level top edges. There is no wide top plate as in the PE parts. Instead, there are three bars across the top, two wider and thicker than the other. Inside the box (black inside), a 45° panel at the back end deflects blast upward. On the outside, there are open (so

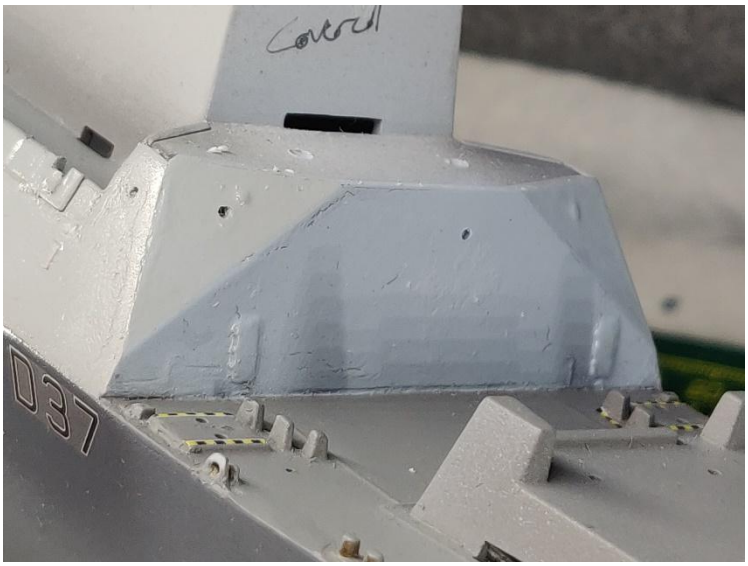


black) triangles cut out under this 45° panel. I built these deflectors from scrap brass – luckily the fret around the PE set was exactly the right width, so the sides, back and internal slope were easily formed from it. I used the bottom and crossed baffles from the PE parts, using CA debonder to take them apart – I don't know if the cruciform baffles are right for the Type 45, as I don't have a clear picture. The two thick top bars were made from 0.3mm brass rod with one side filed flat, and the thin bar from 0.1mm wire.

The yardarm equipment on the PE parts doesn't look quite right, either. The yardarms are not entirely symmetrical port-starboard. Further researched: see notes. I first thought the kit parts might be better, so I cut them off the sprue and put them side by side. The PE does look much better, and although the kit has some of the equipment approximated that is missing on the PE, I don't think I will be attempting to use any parts of the plastic. I will have to scratch build any additions. Airfix does at least give me the length of the "bow" to add to the port aft yardarm.

I also cut off and cleaned up the kit Harpoon launchers. Confirmed that the PE support frames would look more like the real thing, so I cut off the kit frames. From photos it appears that the tubes are further apart (left to right) than the kit would place them, and there are no solid blocks between the tubes as in the kit, so I partially carved away the blocks to allow clear space between the tubes horizontally. Even so, the WEM PE frames look a bit too wide, especially as it looks as if the frames should be below the tubes rather than outside of them, but I am not going to attempt to cut them down.

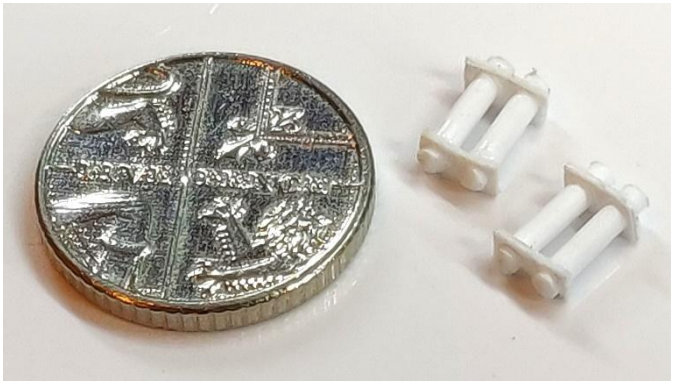
Details below the bridge



I drilled the scuttles on the side and bulkheads under the bridge, to make them a matching size. Photos confirm that there are no scuttles on the port side, so filled the one on the port upper hull in the kit. But there should be one on the forward-facing bulkhead below the bridge, to port of centre, so I drilled that, too.

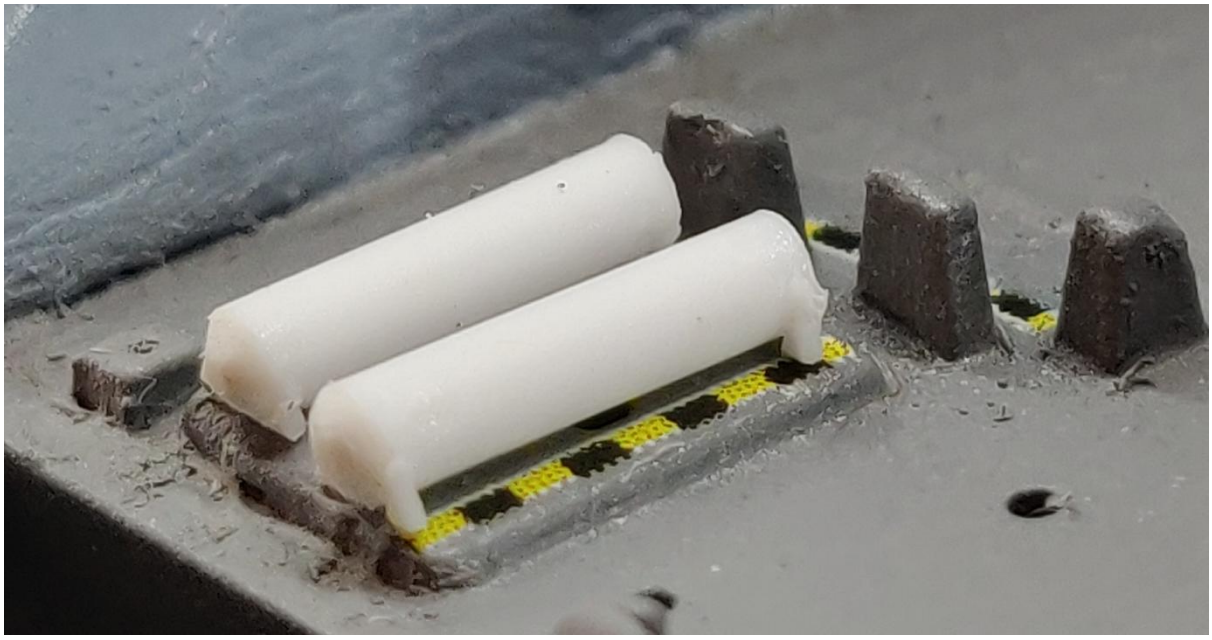
I put on the replacement starboard pennant number decal, using Micro Sol and Set.

I cut four 9mm lengths of 1.6mm styrene rod to make the Outfit DLF(3) decoy tubes on the foredeck (wrongly depicted as life rafts in the kit) and sanded the outer end to a dome shape. I used a 1.5mm leather punch to cut pairs of holes in styrene sheet, then cut the sheet around the holes to make the frames.

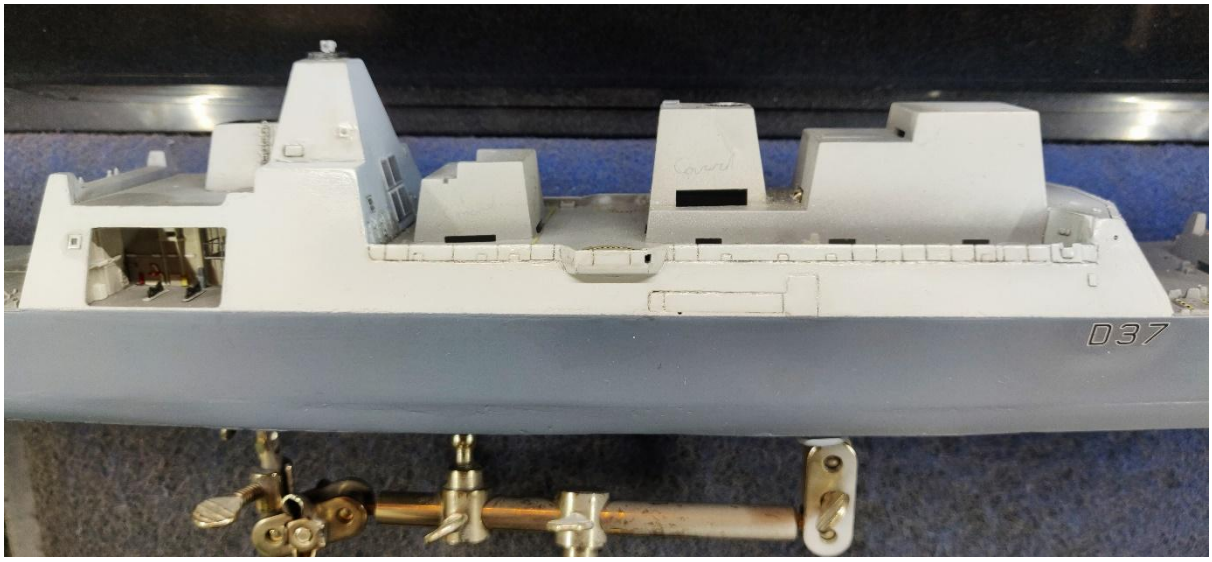


I checked that the deck plinth these sit on actually exists, according to pictures, but it is probably narrower and lower than the kit depicts. I added yellow dashed line decals (Atlantic set) to the edges of the plinth and diagonally behind the blast deflectors. It is not entirely clear whether these lines still exist on HMS Duncan – they are certainly present on early photos. They should form a complete three-sided box around the tubes and their blast deflectors, but the outsize kit mouldings did not permit that. Why are there “blast deflectors”, when these tubes are operated by compressed air? They must be something else.

Then I looked again my reference photos, and found some clearer shots online. My beautiful rectangular frames are completely wrong. In fact, there are no frames at all, just small triangular-shaped supports at each corner. I tried to cut back my frames and move the inboard ones, but the parts were too damaged, so I started again. I made triangular scraps of styrene sheet and glued them under new sections of styrene rod, having first domed the outer ends.



I re-did the pin washing on the starboard side and the front of the mainmast with grey oil wash. I probably did a better job than the first time, but the repeated coats of paint and varnish have made lot of the details fuzzy, so the effect is far from perfect. Also touched up the pin wash on the masts etc, where they are still gloss coated.



I realised I should put on the ship's badge decals while the relevant parts are still gloss coated, as the long-awaited matt coat is not far away. I am hoping the matt coat will banish all the problems I have been having with paint coverage over the gloss coat.

In noticed that in pictures the badge on the bridge is on a thick plaque, painted gold, which is stood out from the bridge rail by a frame, and is probably hung over the top of the rail. I spent considerable time carving a plaque out of styrene sheet to match the size and shape of the Airfix decal. However, when I tried it in place, it looked far too large, taking up most of the height of the rail. I checked the measurements of the decal and it is about twice as tall as it should be: it is about as tall as the bridge windows, and it should be half that. The rail is 4.7mm tall and the badge decal is 2.4mm. I estimate that the badge plaque should be 1.6mm tall. Decided to abandon the plaque, which will only make it look larger.

Then I had the idea of producing the badge on the printer, on photographic paper. That showed the dramatic difference in size, but also that I could probably do just as well with a blob of red paint on a gold background. The red circle would be 1mm diameter on the basis of a 1.6mm total height – though I notice that the plaque has quite a wide gold (I think – other ships have a golden wood colour for the base) border on the real thing, so the badge itself should be small. I made a plaque by cutting a 1.5m circle in 0.3mm styrene and a shape to make the crown part, and joined the two using Tamiya Extra Thin. I tied to rebate the sides to compensate for the oversize. It still looks big

compared to the printed versions, but it looks great held against the model. I primed it with Vallejo White Surface Primer, then painted red, stamped out a 0.8mm circle of masking tape and painted gold. I used a needle to apply a sliver of white paint to suggest the horn. I fixed shaved piece of plastic to the back to stand the badge of the bridge rail and make it vertical.

The Airfix decal, the plastic plinth I originally made for it, the inkjet printed version (one cut out) and the hand-painted badge.

Yardarm details

The White Ensign PE set yardarms for the foremast are a bit disappointing, lacking many details and being inaccurate: see *Sketches for minigun* position and bridge armour

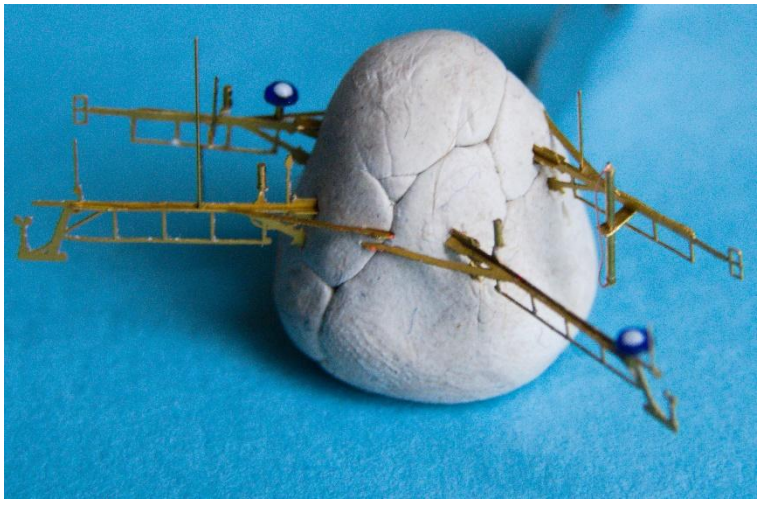
Appendix 5 Photo-etch . I diverted into spending an evening making the bow-shaped antenna for the port aft yardarm. The yardarms are not symmetrical port-starboard, as the WEM PE set depicts them. A substantial strut projects forward (square to the yardarm) from the front of both aft yardarms mid-way along. On the port side a substantial up-down dipole is at the end of this strut with a parallel D-wire, forming the "bow". The Airfix kit depicts this a solid piece of plastic. I cut a scrap of brass to an oversize for the strut, punched a hole in it with a spike and hammer, then cleaned up the hole with a drill. Through this I threaded a 9mm piece of 0.5mm brass rod and glued it. I then clipped the sides and ends of the strut piece as close as I dared to the hole, to narrow and shorten it, folding over one end for the fixing to the yardarm. Finally, with considerable repetition and swearing, I carefully bent a piece of 0.1mm wire to shape (bending it over some 1mm brass rod) and glued it to the ends of the pole and strut, forming the elongated D-shape.

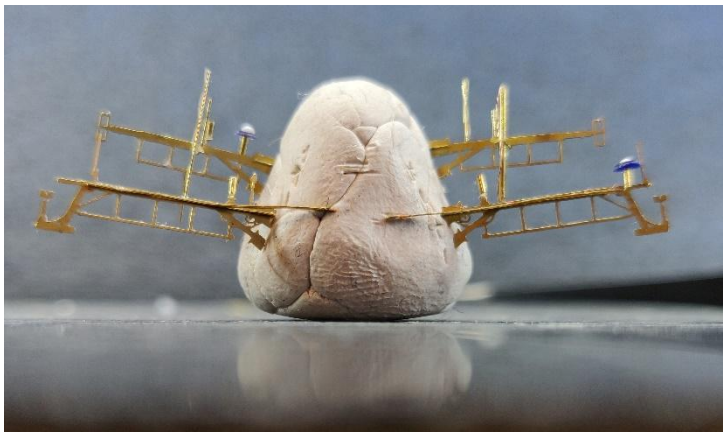
I studied pictures and took notes of the antenna layout of the yardarms. I then added details, or in some cases removed incorrect details. The WEM PE was

not very accurate, and omitted a number of features. The three cylindrical devices were depicted as flat leaf shapes, so I trimmed them off above the stalk, bent the remainder at 90° to form a base, and glued on 1mm of 0.5mm brass rod as the cylinder. I added a number of antennas, mostly 4mm long, from 0.2mm brass rod, including the one on the forward projection from the aft starboard arm, made from a sliver of scrap brass sheet. I fixed the bow-shaped antenna on the port aft arm. I retained the antennas on the PE where they were correct, although the port aft one needed moving outboard and reversing. Items identifies as not existing were trimmed off.

That left the two “mushroom” devices. WEM omits them. The Airfix version is not bad, but there is only one, and the model needs two. The Airfix one is 2.7mm in diameter but looked a bit oversize when held against photos. I punched out 2mm disks of styrene sheet using the leather punches. I first tried adding domes to these using Milliput, but the result was quite rough. I still intended to use it, when I remembered reading about a technique for making rivets, by holding styrene rod to a candle flame. This worked beautifully and produced nice smooth domes. I had a few failed attempts – holding the small domed pieces well enough to sand the bottoms flat is near-impossible. Evergreen rod responds to the heat better than Slater’s, which tends to catch fire.

The styrene sheet was too soft for cutting accurate circles, and a bit too thick, so I tried a few sheet plastics from packaging and ended up with some blue plastic that cut neatly with the punches. I managed to cut the domes flush with the DSPIAE sprue cutters, glued them onto the disks





with VMS CA, then glued on 1.5mm lengths of 0.5mm rod to form the stalks of the mushrooms. Quite satisfied with the results.

Matt varnish

I applied the large ship's badge decals to both sides of the funnel, using Micro Set and Sol.

It is time to matt varnish. I approach this with trepidation, as the gloss varnish coat seems to have been the root of many of my painting problems. There is more painting and weathering to do, but I intend to do that over the matt varnish, rather than risk any problems painting on gloss.

I successfully sprayed the whole of the hull and all the separately-build modules and parts with two coats of VMS Matt Varnish. Looks good! No issues, except that the varnish is very sticky and soon builds airbrush tip dry, which is not easy to remove with VMS Airbrush Cleaner and a cotton swab. Cleaning the airbrush is also a sticky business. There are some places where the differences in colour of different paint coats have not been concealed by the varnish, or edges of paint coats are visible, so some further remedial painting will be needed.

I dry fitted all the components to see how they look.

Lots of details

I noted that the WEM PE life rings look far too chunky – the width of the ring is as great as the hole – so I drilled them all out with first 1.2mm, then a 1.3mm drill. I sanded them to remove previous rough paint, especially on the backs that need to be folded together.

I primed the life belts, all the recent PE work and the brass gun barrels with VMS Metal Prep. I repainted the life belts; finding that the Vallejo fluorescent orange would not cover over the previous darker orange, I first painted them white, then with the orange.

I made a mask with a 0.3mm slot by abutting two pieces of styrene sheet with a drill bit between them as spacer, and glued braces across the ends. I used this to airbrush the white bands on the life belts, still on the fret. This was not entirely successful, as the white was soft and ran a little. I touched up with

brush – there should be sufficient good ones to use as the outer-facing belts, but in any event, they will need touching up once cut from the fret.

I cut all the life belts from the fret and folded over those that remained in pairs, gluing with Mig Ultra Glue. Those where the halves fell loose I glued back to back. Not greatly impressed by the result – they look pretty scruffy close up, with an obvious join between the two halves. Tried to tidy up edges with a diamond file, but there was not much brass fret to remove.

Dry brushed the white on the ship's name plates, previously painted red.[13]

Whilst looking for something else on the carpet, I found one of the trapezoidal mast-head sensor faces, and realised that another 1½ of them had dropped off the foremast. I refixed the broken part with Ultra Glue, then found another detached sensor in the parts box where the mast had been, so refixed that. Scratch built the remaining missing one from two 3 x 3.5mm pieces of 1mm styrene, filed down to shape. Primed it and glued it in place with Ultra Glue.

I worked on the 4.5" gun turret. Having decided to use the Atlantic resin part, I tried it in place, and realised it would sit far too high. Designed for different kit, it has the turntable moulded on. Noting that the Airfix turret base has half the turntable (the other half is part of the deck) and is detailed, I sawed the turntable off the Atlantic part, then used the Dremel with a sanding tool to grind away the turret floor from the Airfix part, leaving only the upper turntable half, which I glued to the now-flat floor of the Atlantic turret. I also put in the resin gun mantlet from the Atlantic resin gun barrel, having cut off the horrible barrel and drilled a 0.5mm hole for the brass barrel to fit in.

I black-primed the resin gun mantlet and the Atlantic 4.5" barrels (one a spare) with black Vallejo primer. I painted the top of the gun mantlet with a mix of Bronze and Light Rust, leaving black the section where the gun barrel joins. When dry, I covered the mantlet and the sides of the embrasure with my new Vallejo liquid mask, as a preliminary to painting the turret.

I prepared to paint a lot of small parts, including all the recent PE assemblies, the turret, the missile silos and the satcom antenna domes for either side of the foremast. The fit of the halves of the domes was poor, but after some

[13] Ultimately not used.

sanding and the removal of the tabs, a decent fit was achieved. Gentle sanding with a 600 grit sanding stick removed any visible join. I removed the plastic flag gaffs attached to these parts because I will be replacing them with wire – the kit gaffs are 4mm long. I noted previously that these gaffs should not be central – they go forward of half way cross the sponsons. It is clear that some filler will be needed when the dome parts are fitted to the foremast sponsons.

I also cleaned up the kit dome and support to go on the aft uptake. In doing so I noted that the size and shape of the small dome in the kit (believed to be the satellite TV receiver) does not match the photographic evidence[14]. This dome should be near-spherical and seems to be 5/6 of the diameter of the foremast satcom antenna domes, making it 5mm in diameter, if the kit foremast domes are correct at 6mm. It seems to rest on a thin cruciform base. I couldn't find a sphere of this size, so ordered a cheap set of ball bearings.

I brush painted deep shadow areas in the PE parts in a very dark grey, mainly because they may be missed in future airbrushing and I did not want any bright brass showing.

I started assembling the Harpoon launchers. Observations show that the frames should be very much underneath the tubes, rather than outside of them, but the PE frames are really too wide, at 5.5mm. On the other hand, the Airfix parts would have the tubes too close together, as there should clearly be a big gap – say the diameter of a tube – between them horizontally. They are probably also too close vertically, but it is hard to do anything about that. I glued a 1.5mm spacer between each pair of tubes, taking the overall width to 6mm and looking right in relation to the frames, but I think a bit too wide visually, and in relation to the blast deflector boxes. I am tempted to try to saw the PE frames in half to narrow them, but that risks ruining them completely.

Later, I added a spacer under the Harpoon launchers to lift them up, so the exhausts meet the top of the blast deflectors. On the real ship the base as depicted in the PE seems to sit on a frame fixed the deck.

[14] The Haynes Guide, published 2014, shows the small kit-type satcom antenna domes on all the ships, so they must have changed after the book photos were taken.

I made a 4mm cross of styrene as the support for the ball bearing dome, then hollowed it out with a spherical burr in the Dremel. Although it appeared to be working at first, the tool destroyed the part. So I tried again with 4mm wide strip of styrene, and chose the best of three “bowls” cut into it with the burr. I cut the strip down to size around it, then removed the corners with sprue cutters and a knife to form the cross shape. This support was then glued to the kit arm, to be painted before the ball, also to be painted separately, is glued on. Primed the ball with VMS Metal Prep, and the base with Vallejo Surface Primer white.

Airbrushed the accumulated collection of small parts, and the white scar down the foremast, in Sky Grey.

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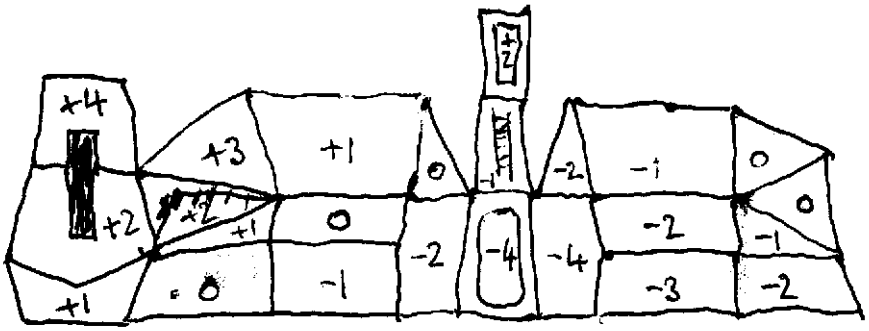
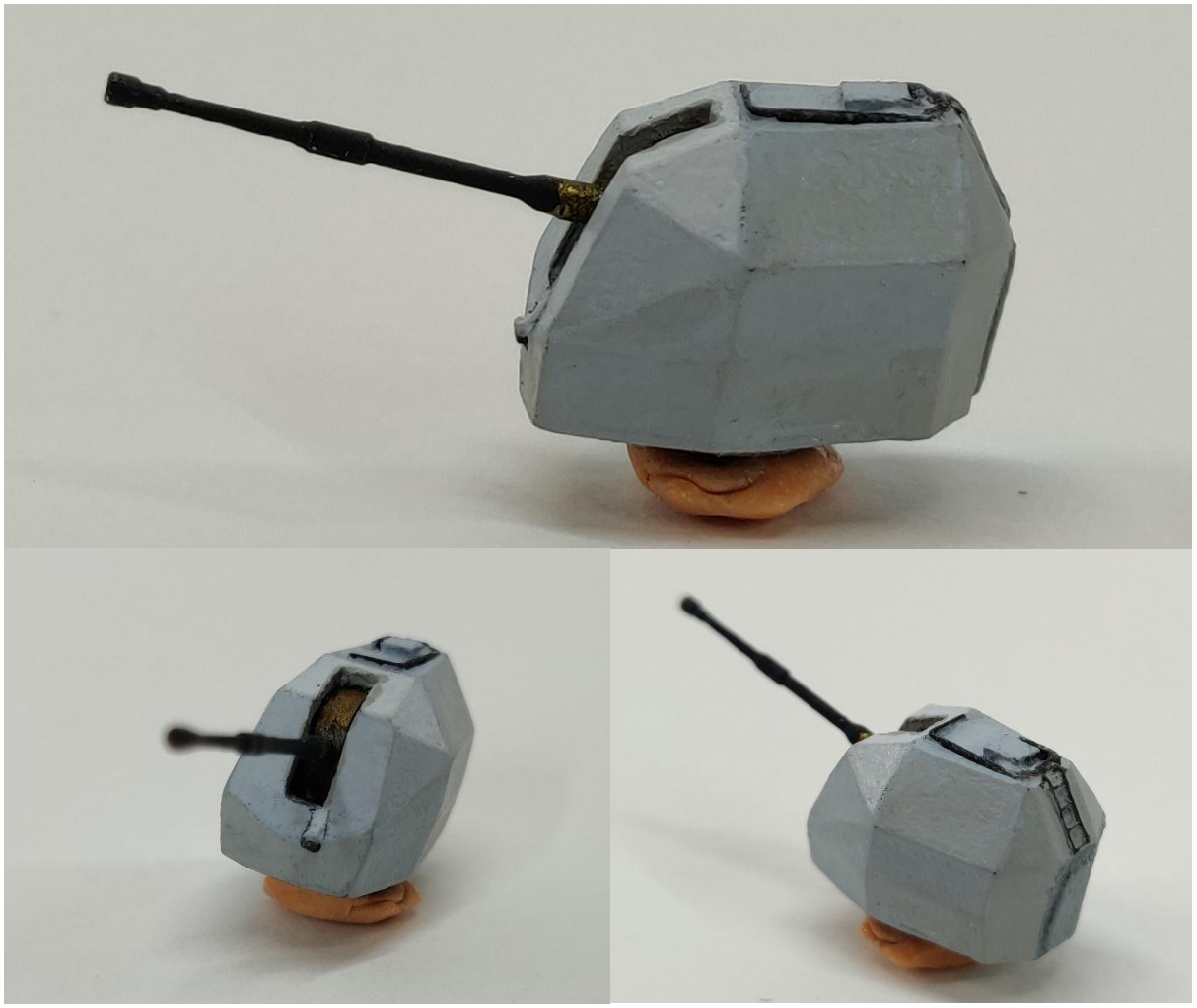
I airbrushed highlight colours (0 and +2) on those parts that would be in sunlight, directionally from above the port quarter.

I hand-painted the three satcom antenna domes, including the ball bearing, in white with touch of green and Wolf Grey added, to achieve their distinctive pale green shade, and glued them all in place, filling gaps with Perfect Plastic Putty. Photos show that the supports for the domes have only a narrow ledge to the side of the sponsons, so I attempted to build up the front and rear surfaces with Perfect Plastic Putty. It took several attempts at filling, sanding/filing and painting to get a satisfactory shape and surface. I am not convinced that the Airfix domes for the foremast are the right shape (they should be more round and less elongated), but I am not changing them now – they could have been cut down, reducing the tapered bottom.

I drew a schematic of the “Kryten” 4.5” turret to allocate colour shades to each panel, and painted them on by brush. I did not highlight the turret door



because the Atlantic resin part over-emphasises it – the real door is flush, not raised. Painted the ladder in NATO Black, as per photos. I removed two details shown on the front of the turret, which do not exist, and painted on a representation of the shell case chute above the remaining blob on the part – scratching the vertical edges with a knife down to

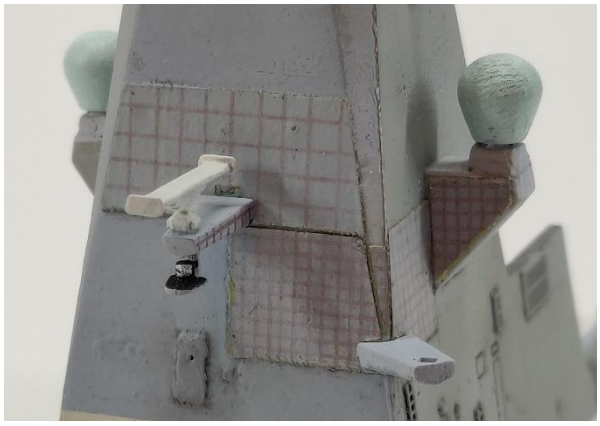


the black primer really helped suggest the shape. I also painted in NATO Black the gun barrel, the six ECM antenna clusters for the foremast and the

“mushrooms” on the yardarms. The base of the gun barrel, inboard of the cone part, was painted bronze. The muzzle brake is silver. Glued the barrel in place with MIG Ultra Glue.

Then I realised, consulting photos and after a lot of puzzlement, that the PE parts for the six ECM antenna clusters are supposed to be folded back on themselves to be double-sided L shapes – a step not mentioned in the WEM PE instructions! Felt stupid – I had assumed they were up-down dipoles. These are quite simple structures in reality, just a thin arm with the upward black antenna – the loops shown in the PE parts probably represent wiring. I folded and glued the parts, damaging the paint in the process, so repainted them. The wiring I did in dark grey, to distinguish from the structural parts, and the antennas in NATO Black.

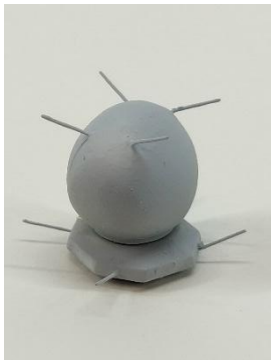
I drew the 1mm radar-absorbent tiles onto one side of the upper foremast radar sponson with the 0.03mm brown marker, then gave it a Wolf Grey wash to tone it down. It looks like the object on a suspended platform under the radar is a double-decker lamp or lantern, with black fittings around the lenses, and the floor of the platform should be black.



I painted the Type 1048 search radar Insignia White[15], along with the cylinders on the yardarms and the mushroom on the funnel surround. The little platform under the radar is black on top: it appears to support a black cylinder with two lantern lenses, one above the other, which I suggested with two dabs of silver.

I widened the slot for the lower (navigation) radar sponson on the fore port angle of the foremast and checked the fit.

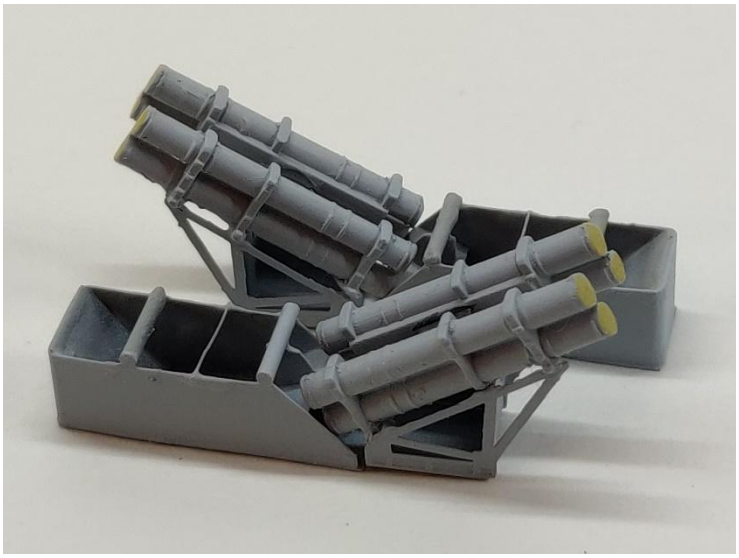
[15] I prefer not to use pure white or black on models unless I want intense emphasis – Insignia White is toned down a little.



After dry-fitting it, I decided I was not happy with the heavy shading effects I achieved earlier on the Sampson radar dome, so I resprayed all the mid and light tones, by mounting the dome in the centre of a turntable at an angle with Blu-tack, and spraying successively lighter colours from higher angles as it rotated, finishing with light burst of white from directly above. I achieved a much more subtle effect – perhaps too subtle, and the dark tones now show a very heavy contrast.

While I had highlight colour mixed, I brush painted the top edges of the bulwarks and the bridge rail. A pleasing effect, again quite subtle, and easy to do.

Painted the ends of the Harpoon tubes UK Light Stone, a sand colour, to match pictures.



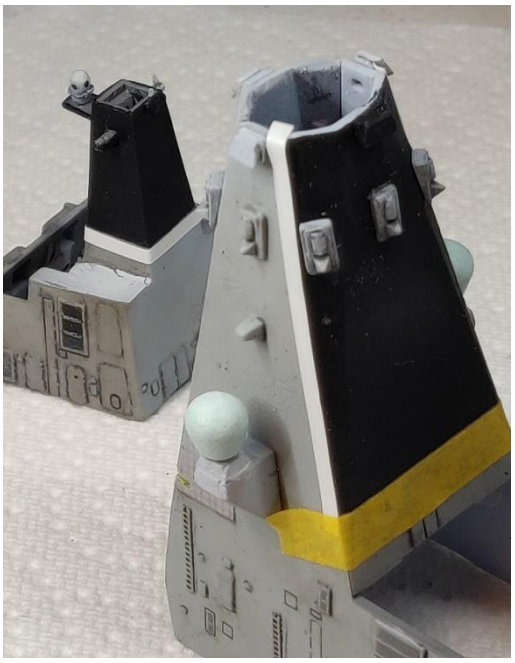
I have resolved to assemble and paint the foremast unit fully, so it is ready for addition to the model at the end.

Back to black

To do that, I need to repaint the matt black surface on the aft side of the foremast, and the other black sections of mast. I also have to make a second attempt at the black boot topping, which got covered by earlier resprays of the hull.

I masked the boot topping line with Tamiya Masking Tape for Curves, 12mm, referring carefully to photographs. The lowest line of the boot top follows the still-discernible join between the kit sides and bottom, but slopes gently up from amidships to the bow, clipping the anchor recess on the starboard side and ending just below the bow anchor. There is hardly any noticeable curve to the line. At the stern, the boot top slants slightly upward again towards the transom, because there should be a clear boot topping on the transom above the “wing”, which is below the waterline. I don’t think the real ship has this

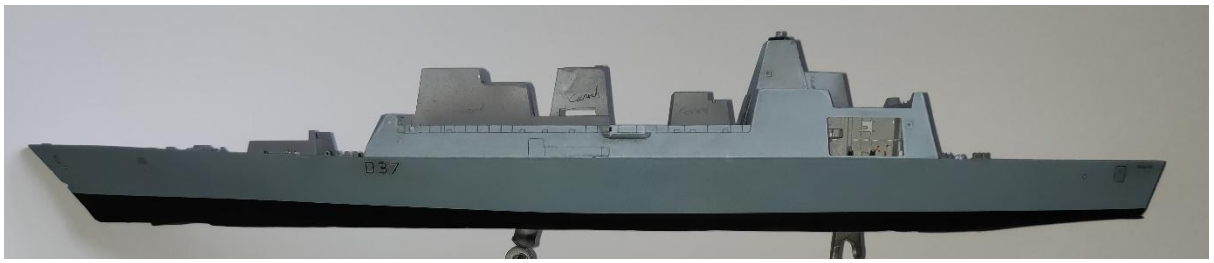
upward slope, but the alternative would be to raise the boot topping by a couple of millimetres all along its length, which I don't think would look right. The Airfix kit is probably slightly thin at the stern. The seascape will hide any obvious inaccuracy.



I masked off the other masts to receive a black respray, again using Tamiya tape for curves, 2mm, to be able to mask accurately around details. I like this method for the fine control it gives – broader masking tape can then be added roughly over the Tamiya tape to protect a larger area.

For extra safety against leaching under the tape, I sprayed matt varnish over the tape edge. When dry, I sprayed the black. It seems to have been a great success, though there is some shininess along the edges of where the tape has been – either adhesive from the tape, or it has lifted some of the matt coat. The lines are perfectly crisp.

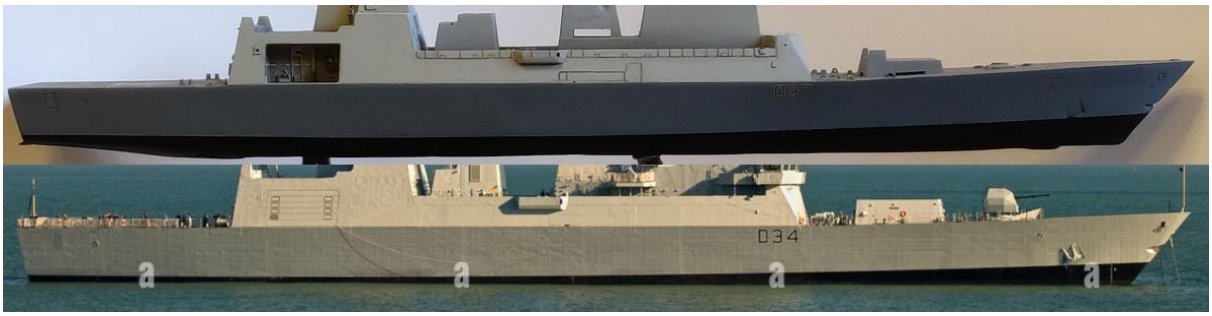
I was not sure about the line of the boot topping – it looked visibly curved. So I



did a comparison of photographs in software by overlapping images, and confirmed that I was right – the boot topping, as I have painted it, is too high at the bow and too low amidships. It looks correct at the stern. I will have to repaint the hull sides yet again, at least in the bow area! I have concluded that the boot line should be 2-3mm lower at the bow, sloping back fairly straight to the middle of the ship. The slope from the stern should level off by the hangar. The line is too low for most of the length of the ship – it is only too high from the missile housing forward.

Part of the problem may be, according to my detailed photo comparison in photo editing software, that the prow of the Airfix kit may be too high, ie the

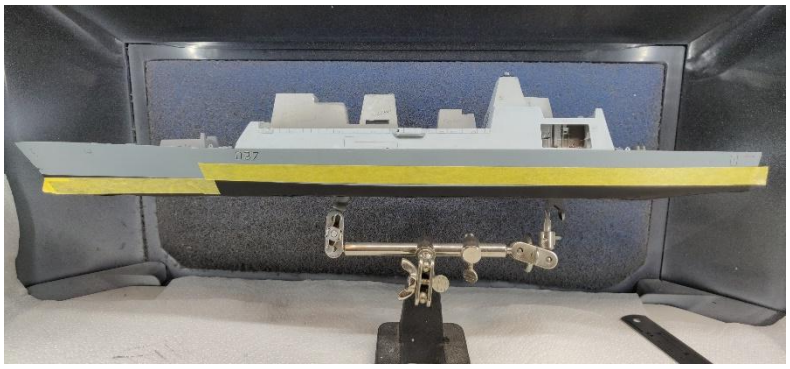
bow slopes up too much, and the bight for the bow anchor should be much bigger than the kit shows. The position of the starboard anchor on my model

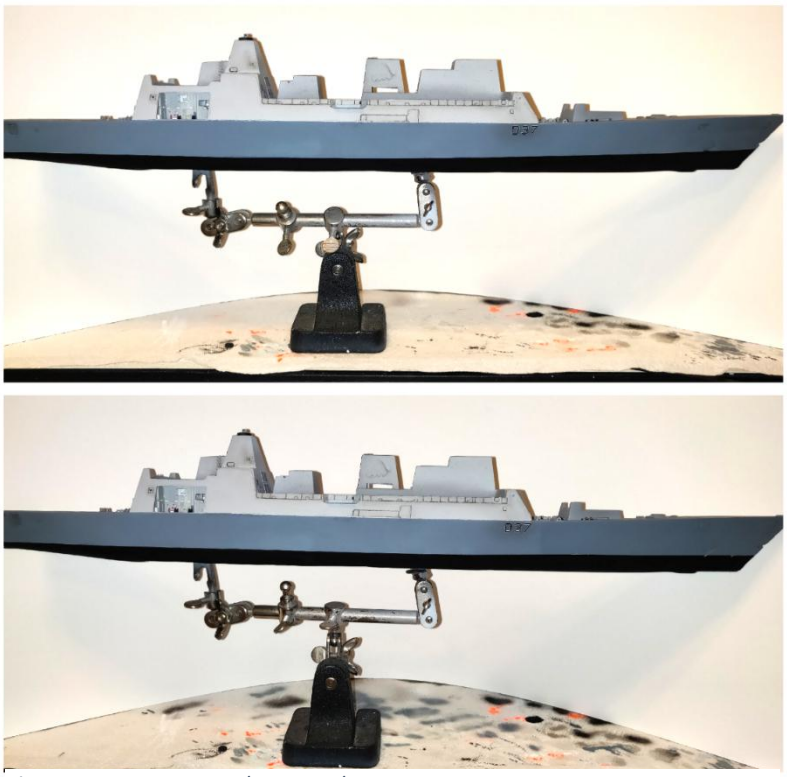


may also still be slightly wrong, so choosing correct reference points is hard.

I re-painted the boot topping, lowering it at the bow and raising it amidships. To achieve this, I needed to paint both black and hull colour (different on each side). I was afraid of the grey not easily covering the black at the bow, so having masked the lines, I first brush painted the bow adjustment in white. This did cover easily when airbrushed grey, but left flecks of white visible along the tape line!

The new version is much more pleasing to the eye, having lost the ugly downward curve amidships, but will still need further adjustment. I still have an upward hump towards the bow, and I need to clean up the edge and white spots.





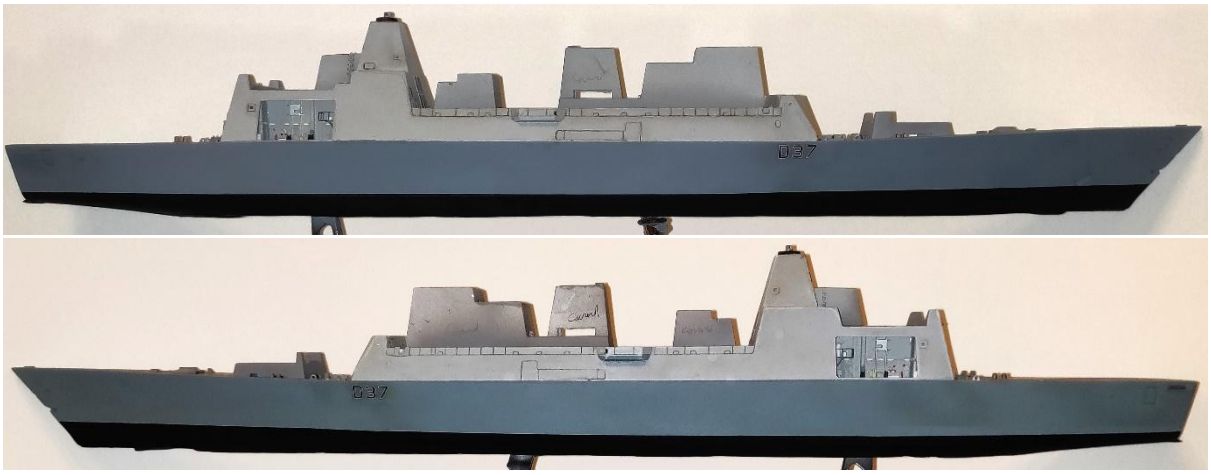
First attempt top, second attempt bottom

Third attempt: I lightly sanded the dividing line in the areas to be resprayed, to remove any edge to the paint under the previous masking line(s). Then masked the bow area on both sides and sprayed black, mainly in the inch or two nearest the bow, to ensure that the entire line for the next coat would be entirely on black, and to get rid of the white artifacts. Left the black to dry fully and then masked for the grey coat, in a single, almost straight line from well back on the ship, climbing almost imperceptibly to the bow. Checked carefully that the curvature of the ship did not distort the straight line when viewed square on. I reverted to taking the precaution of sealing the masking tape with matt varnish, leaving it to cure overnight. I took the opportunity of varnishing the other matt black surfaces on the masts, that I painted recently.

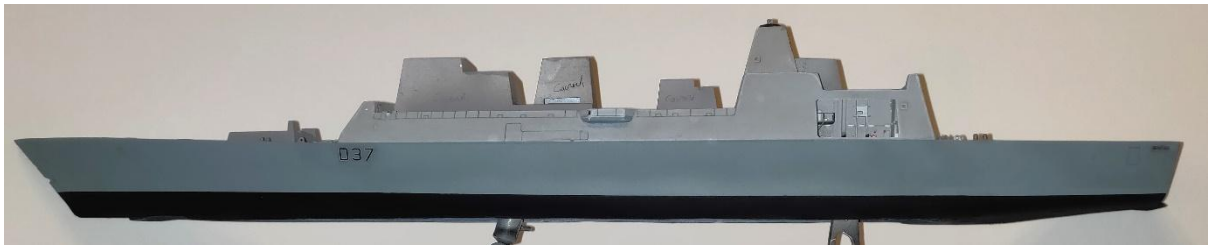
Before spraying the grey, I decided to sand down the ridges from previous masking around the seamanship doors in the hull, which will mean re-doing the pinwash for the third time. There are similar ridges around the ship's name on the quarters, but those will need to be treated later.

Sprayed the grey on the hull sides and removed the masking. I am very pleased with the result.

I did a touch-up right on the bow, and set about a slight correction to smooth a mild kink in the line on the port side, below the bridge. I started by doing those in black by brush, masking the grey. That in turn needed correction, so I counter-masked and toughed up the grey by brush. At this point all looked



pretty good, but I decided to further adjust the line amidships, to raise it slightly and conform better to the line of the rail. But paint leached under the tape, and I had to do several rounds of touching up by brush, with or without tape, often straying onto the layer before. Eventually decided that the brush-painted grey was going to show, so I fired up the airbrush to apply a coat of grey. That again leached under the tape, but after correcting the black again by



brush and sanding out an irregularity in the surface, my final coat of grey was perfect. The boot topping is now done.

More details and decals

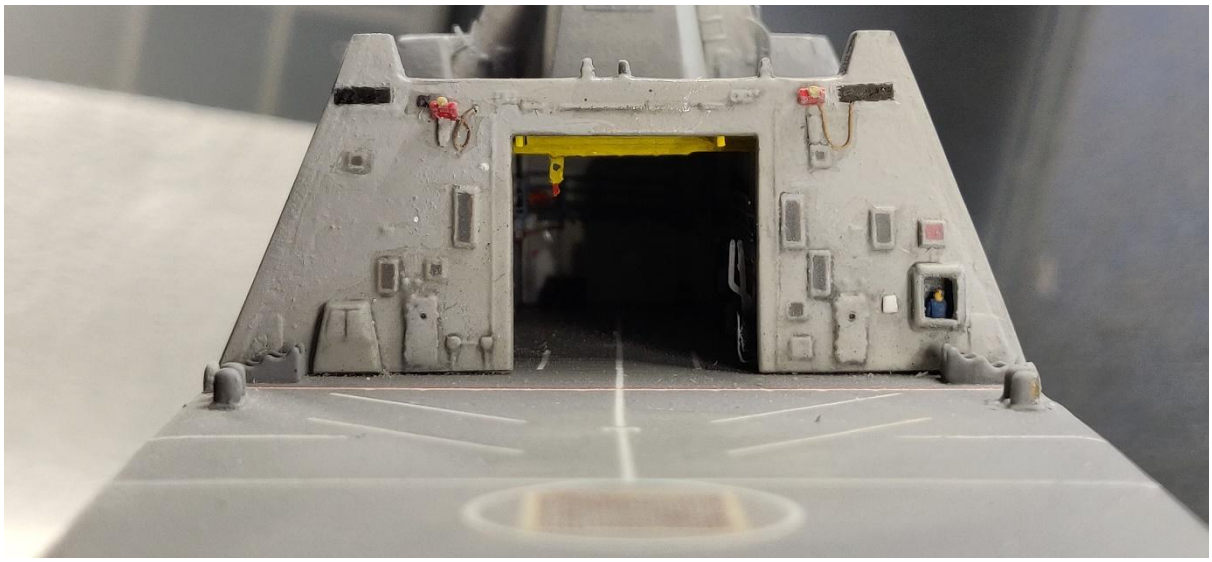
Time for some more decals. On the rear of the turret, there is a large yellow sign on the panel the right of the door, and smaller yellow sign much lower down, on the door. The door has a black ladder mounted on it in two 3-rung sections, the lower over the yellow sign. The frame on top of the turret is simply black rail all the way round, so the missing section needs to be added.

The larger waterline gauge markers go, forward, half way between the seamanship door and the bow (so forward of the starboard anchor) and aft, immediately aftward of the hawse-hole. The smaller gauge markers go just forward of the hole in the ladder door, and immediately forward of the hangar

wall. The latter should be full height markers, but as I don't have a decal, I can't do that.

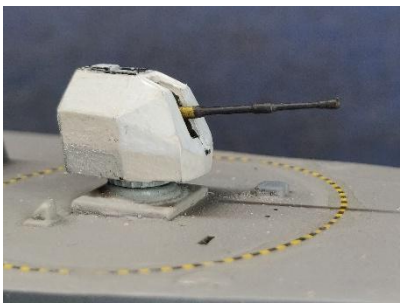
The yellow stripes, very slender, go round the Harpoon tubes just behind the top frame.

The two white stripes are to be added over the hangar door. They do not cover the horizontal bar across them. Before doing that, I should finish off the painting of the hangar bulkhead and the wall above it, which is Light Weatherwork Grey on all faces. To re-do the rectangular windows, I carefully cut 1.5x4.5mm strips of masking tape – the dimensions came from measuring a photo. Having painted black underneath, I placed the tape and sealed it with more black paint, then painted in -2 shade, Sky Grey. I took the opportunity to give most of the clear areas of the wall a recoat, as it looked generally dirty from earlier operations. Yet again, paint leached under the masking tape, so I ended up repainting the windows by hand, alternating black and grey until I was satisfied with the result.



I put patches of VMS gloss varnish on the decal sites. I was too casual in doing this and allowed bubbles to remain, which dried into the varnish and spoiled at least one site. After some shaving and sanding, re-coated with varnish. My second attempt was also poor and left bubbles or lumps – the VMS varnish does not seem to brush particularly, well, and perhaps I need to use a better brush for smoother application. Once dry, I sanded this back down, and repainted over the black with a brush – I dare not apply the decals if the surface is poor, as the decals will make it much more difficult to repaint. I could

still feel the varnish thickness with my finger, so I sanded down further. I do not think this damaged the paint, and I then re-did the gloss varnish more carefully and precisely. I put some matt varnish over peripheral sanded areas to check that the sanded areas were not going to show once re-varnished.



I painted and cut to length a short section of 0.2mm wire to complete the rectangle of rail around the turret top, painted it black and fixed it, which was very successful. I also cut two three-rung sections of PE ladder and painted black, to mount later, after decals.

I brush painted the top and forward side of the wall above the hangar door. Painting revealed some flaws in the plastic that I might have to fill. While I had +1 colour on the wet palette, I first made some corrections the aft mast front, where cracking is showing again, and then attempted to semi-dry brush the ship's side where the paint had become stained and discoloured. This was a bit of disaster, leaving clear brush marks and colour difference that would have to be corrected later *(see page 91)*.

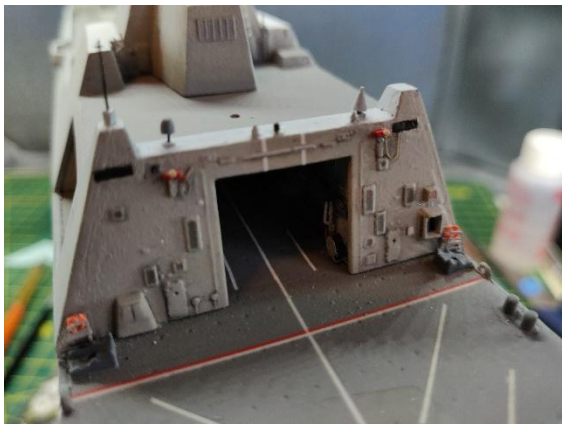
I had to repaint the hangar roof due to encroachment of the paint from the wall, and other pre-existing staining.

I made and painted 1mm squares of styrene sheet as the plinths for the two large features Duncan has on top of the hangar wall, the "spike" and "bell". I should have used thinner styrene – they looked too big, so I sanded them down in place. I made the base for the antenna on the port side "horn" from 1mm square styrene strip, fixed it and painted it. Measurement shows this antenna, including base, to be 7.5mm high in scale. I drilled the hole in the bass and used 0.2mm wire to make the antenna.

I cleaned up and painted (Insignia White) the two small Mk 1047 navigation radars, one of which goes on the starboard "horn". I made the "bell" from

2mm styrene rod. I tried forming the dome by heating the end, but it created too much overhang, so I domed the end by sanding with an emery board. I made the "spike" by taking a 3mm piece of sprue, clamping it in pin vice and rubbing it on sandpaper at an angle to sharpen it, all the time rotating it. The bell was painted Ocean Grey, the spike

Wolf Grey, and both were drilled for 0.2mm wire shafts, also drilling the bases. I glued the wire to the parts and dry fitted them, but put them aside for later

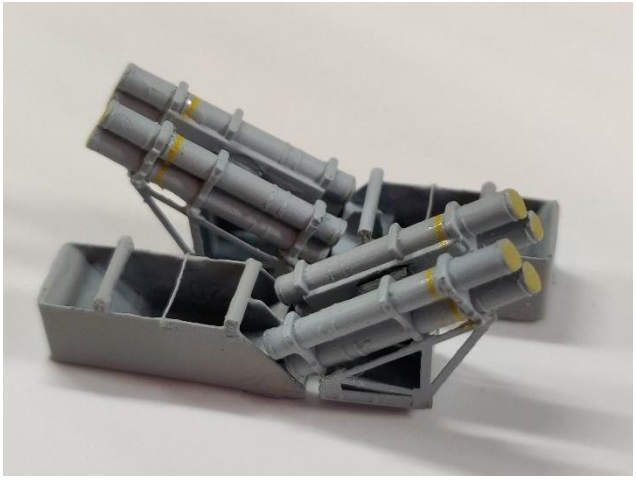


fixing, as they are vulnerable to damage in place.

While I had Ocean Grey on the wet palette, I painted the moulded deck hatches and life raft supports.

I added two life belts to the ejectors and glued them in place beside the hangar door. The belts don't look great, due the visible gaps between the two halves, which I might address later.

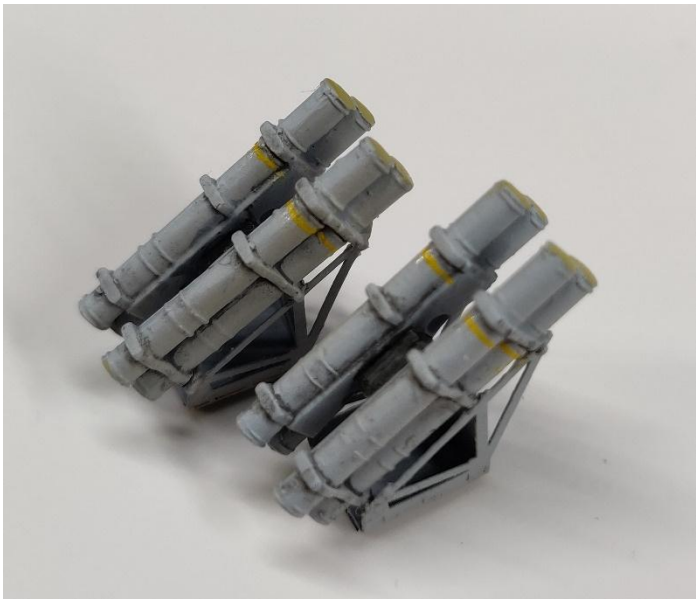
On to the decals. I first put the yellow stripes on the Harpoon tubes, just below the upper frame, using yellow stripe decals I bought for another project. I tried halving the narrowest stripe for correct scale, but the lines were barely visible to the naked eye, so I put on the full-width decals. Whilst there, I glued 0.5mm styrene rectangles under the launchers to raise them slightly, as done by a frame on the real thing, so that the tubes meet the baffles in the blast deflectors correctly. The edges I coloured black with a Sharpie.



I put the two yellow sign decals on the gun turret, and also stuck on the two short ladder sections I made earlier, one of them over the decal.

I did the two white stripes over the hangar door, cutting the decal into two narrow strips for above and below the bar across it.

Finally, I added the eight depth scales to the hull sides. One I placed a few mm aft of where I intended, one was not on the gloss coat and one broke, but generally seems to have gone well. All decals were assisted with copious quantities of Micro Sol.



I did a light pinwash of the harpoon launchers and the seamanship doors in the hull sides. I ignored the rules and pinwashed over matt paint. The wash did spread out across the surfaces, but being so thin, it didn't show except where it accumulated in the corners, where it was meant to be.

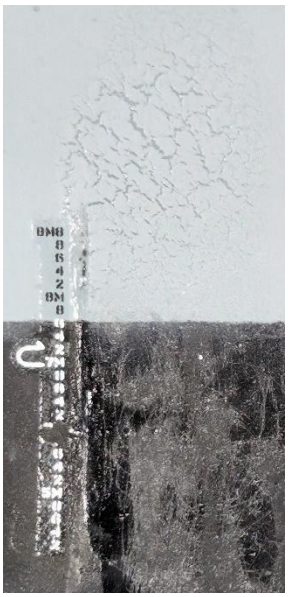
January 2024

Returning to the model after a Christmas and New Year break, the first step should have been to matt varnish over the new decals. But I decided to first correct the port side paintwork I messed up earlier on the ship's upper port side, and the rough and damaged paintwork on the forward-facing surfaces – below the bridge and on the aft mast, thinking it would be good to get these under a protective layer of matt varnish as well. So I embarked on some filling and sanding of the surfaces to be painted, aggressively attacking the top-right edge of the aft mast face where cracking keeps reappearing, and applying thinned Perfect Plastic Putty wherever I suspected a scratch or depression. I then masked up and sprayed these areas in Wolf Grey. This was successful in the intended areas, producing much smoother surfaces on the forward-facing bulkheads, but I had another disaster: I only used 12mm masking tape to protect the lower hull, and I got overspray all over the lower portion of the hull in the whole midships sector, both on the grey and black surfaces. The upper sides no look much brighter and cleaner – so much so that I had to touch in the bulwark panels with brush, as they looked dull and dirty compared to the newly-sprayed areas (these panels were masked during spraying to protect the pinwashing, though the pinwashing might now look a bit too dark!). During

spraying I decided to correct the colour of the port side of the main mast, previously a darker shade (but also in need of repainting) – it is at the same angle as the upper hull, so should be the same colour.

Before spraying I also did some brush corrections on the starboard side, particularly repainting the forward end of the upper hull, around the scuttle, which had been previously damaged. I touched in some of the previous pinwashing to neaten it.

I set about correcting the overspray by partially respraying the loser hull. I still had ethe gloss areas around the decals that I worried were too thick, so I masked the decals and sanded around them to remove and thick varnish. But I forgot what should now be a cardinal rule: never spray Vallejo paint directly onto gloss varnish, as that is probably the source of the cracking issues.



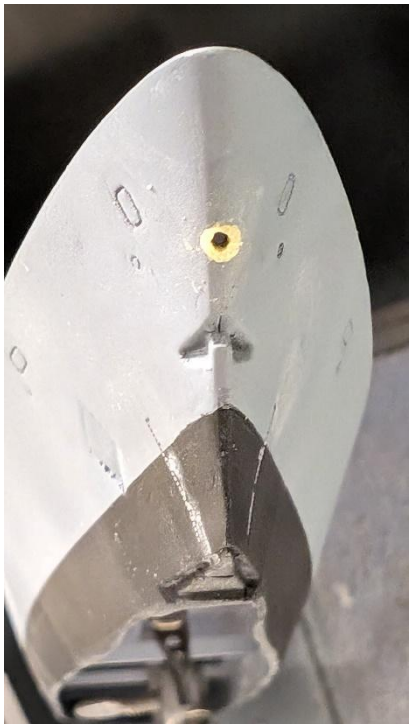
I sanded the area to be painted with fine grit sandpaper to remove any thick splatters of paint. Having carefully masked the upper hull, the decals and doors, and the boot line, I resprayed the hull colour (Medium Grey) successfully, though I ran out of the paint towards the end. This was fine, except that, as I should have anticipated, there is some cracking in one place where the paint overlays the gloss varnish. Other glossed areas show through the paint as darker patches, even where the varnish was largely removed by sanding.

I also did some touch-ups with a brush, particularly where the outline of masking tape was visible as difference in tone.

Next day, I did the matt varnishing to avoid making the same mistake again. I first sanded away the cracked area and was pleased that it almost disappeared without removing all the grey paint, so it hardly needs repainting. The varnishing was generally successful, although the areas where the gloss was showing through the paint will need repainting, and the black bottom is badly discoloured in places, so touching up by brush will be needed close to the

decals. Matt varnishing included the stripes above the hangar door and the decals on the turret and Harpoon launchers.

I tried to build up the lip of the hawse-hole at the prow. If there ever was a small, raised lip on the kit, it has long since been sanded away. The real ship has quite a pronounced lip around the hole. After several attempts I managed what I hope will be a passable result, by laying a disk of Milliput over the hole, then pushing a hole through it with a wet spike, and smoothing the exterior with a wet finger. After several hours, I was able to trim the edges and smooth the surface with wettened knife blade. One cured, I sanded lightly and brush-painted Ocean Grey. The result is pleasing.



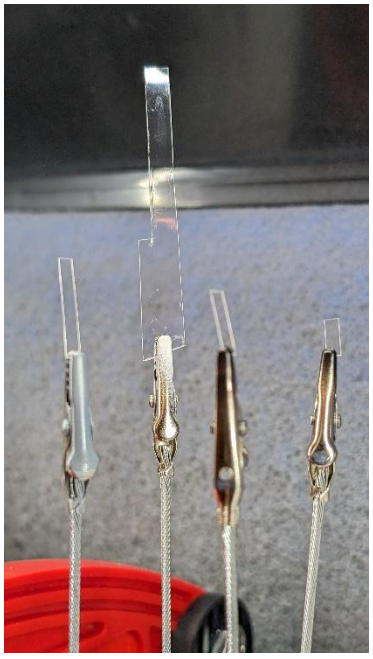
Having allowed the varnish to dry, I masked and sprayed the black boot topping on the port side. The repair of my disaster is near complete, though I have to wait for delivery of more Medium Grey paint before finishing the hull side fully.

I started to feel I might want to light the interior spaces! This impulse ought to be resisted, but I ordered some small LEDs. There should be paths available to pass wires, but drilling the necessary holes after assembly will be tricky. It won't add much – the boat bays are already visible, the bridge will be behind windows, so the main benefit would be to make the hangar interior detail more visible. There would not be any pretence at scale lighting and if the lights are at all visible, they could detract from the model.

Windows 11

Time for another digression: glazing the 11 bridge windows, and the flight operations caboose on the flight deck.

To measure the windows, I tried pushing length of Blu-tack into them to create a negative mould. This worked reasonably well, but in the end I just inserted my digital calliper directly into the openings to measure them. The front bridge windows (seven) are 5mm wide. The side windows are slightly narrower, say 4.6mm. the aft-facing windows are 2.6mm. All the windows are around 2.6mm tall, though there is some variation. Because the corners are not square, the windows will need some individual fitting. The caboose window is 2.9mm tall x 2.2mm wide.



Cutting and filing these small shapes without damaging the clear surface will be a challenge. I cut some 2.6mm and 3mm strips of clear styrene (Evergreen Clear “Polystyrene” sheet, nominally 10 thou./0.25mm, though actually measures 0.35mm thick) and dipped them, plus some extra, in Pledge Multisurface Polish, and left them to dry overnight.

I found the windows to be quite different in shape, so “glass” needed to be custom fitted. After a few attempts I found that strip of 2.6mm clear sheet, cut into 5mm lengths, fitted most of the front windows with a bit of adjustment. I hit on using a short length of 2mm Tamiya vinyl tape to hold the glass whilst fitting it: the tape allowed me to see the corners but to be able to hold and move it without marking the glass, and importantly, prevented the glass being lost inside the bridge. Though my initial intention of using the tape to hold the part in place while the glue dried did not work, as the tension in the tape was enough to spring the part out of place.

After shaping and dry-fitting the window, I used a cocktail stick to apply a reasonably generous amount of PVA glue all around the window frame and pressed the glass into place. I did get some glue on the glass, especially where the glue tended to accumulate in the corners; but there were also some yawning gaps. I found that glue on the outside was very easy to remove with a

wet cotton bud; so much so that I was able to do multiple rounds of adding more PVA glue as putty round the glass, filling gaps and concealing edges, each time removing the surplus with a wet cotton bud [16]. The glue dries clear. The result was by no means perfect, with stains the glass, but I was pleased with the overall result. Visibility into the bridge interior is better than I expected. I added three more crew figures, to make the bridge look busier and to have more faces at the windows.

I also glazed the flight operations caboose, taking three attempts to get the glass exactly the right shape. For this

[16] Another round of "puttying" with more PVA was done after the photos were taken.

I reverted to the Blu-tack method, successfully using the impression as a guide to cut the styrene sheet.

In retrospect, it would have been better to apply less glue for the initial fixing, reducing the risk of getting glue on the inside face, and to rely on the later "puttying" with PVA to fill the gaps.

I also filled the three holes below the bridge, representing scuttles, with PVA. This needed repeated applications, as the PVA seemed to shrink, and/or to drain on the other side of the holes, and I found it very difficult to both keep the surrounding services clear of glue, and to fill the holes to a flat surface.

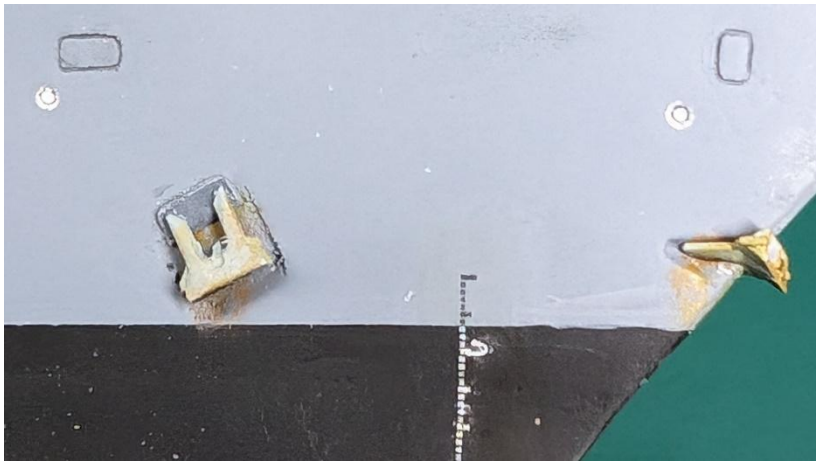
Hull and foredeck

Back to the hull. Having received a resupply of Medium Grey, I brush painted the uneven areas of the port side lower hull. Mixed results – the brush painting always seems to look lighter and shinier than the airbrushed paint – but after multiple coats, I am reasonably satisfied, with matt varnish likely to hide any differences in shine. I experimented with Vallejo flow improver and retarder medium. The former seemed to make the problems worse. The latter thickened the paint enormously, being a gel, but when thinned with water, may have helped.

I had abandoned masking the hawse-holes in the hull sides some time ago, during all the resprays, so now they needed repainting. Using my trusty leather

punch set, I cut a 1.5mm hole in a piece of 40mm masking tape. One piece served as a mask for all six holes, and the hole was just large enough to see through it to centre it properly. I sprayed lightly with 50/50 mix of Silver and Bright Bronze. Once all six were done, I touched in the plugs with Wolf Grey with a fine brush, as a highlight colour. This went smoothly (except for a good deal of airbrush clogging) and I am pleased with the result. I used the trigger limit feature of the airbrush to avoid excessive paint flow.

I cleaned up and painted the anchors. I re-made the block above the starboard anchor, that was previously re-done but lost in all the sanding and repainting. This styrene sheet 5.5 x 2mm was used, sanding the edges to shape.



Before fixing, I dry brushed and stippled both the anchors and the apertures with two shades of rust paint. I was not entirely happy with the results, as I got more of a thin wash than bright spots, but with some counter-dry brushing with grey, I get an acceptable outcome. The rust in the anchor apertures extends vertically down the hull below. To enhance the rust effect I added a few tiny spots of bright rust with a 10/0 spotter brush[17].

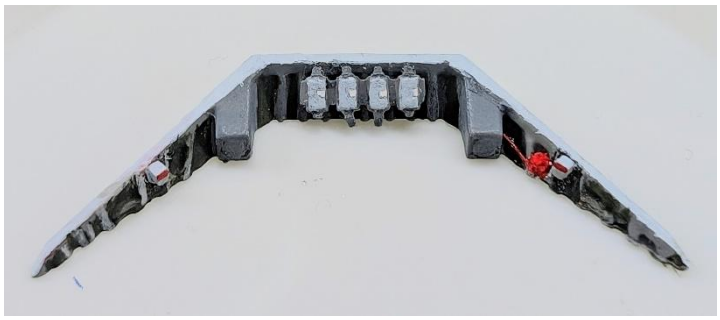
On to deck furniture. The lines on the foredeck, moulded on the Airfix part, are steel cables, jackstays, for attaching safety harnesses to. They are steel-coloured and on supports just above the deck. I did an experiment with glueing down fine wire to plastic, trying VMS CA, Mig Ultra Glue and PVA. All worked

[17] After the photo was taken.

reasonably well, but Mig Ultra Glue left the least residue, and had sufficient tack to hold the wire in place from the start. I cut a long length of 0.1mm wire and painted it by dragging through the bristles of a brush: first VMS Metal Prep, then Vallejo black primer, then a mixture of Vallejo Natural Steel and Silver. Some lumps from the metallic paint – I must thin it better in future.

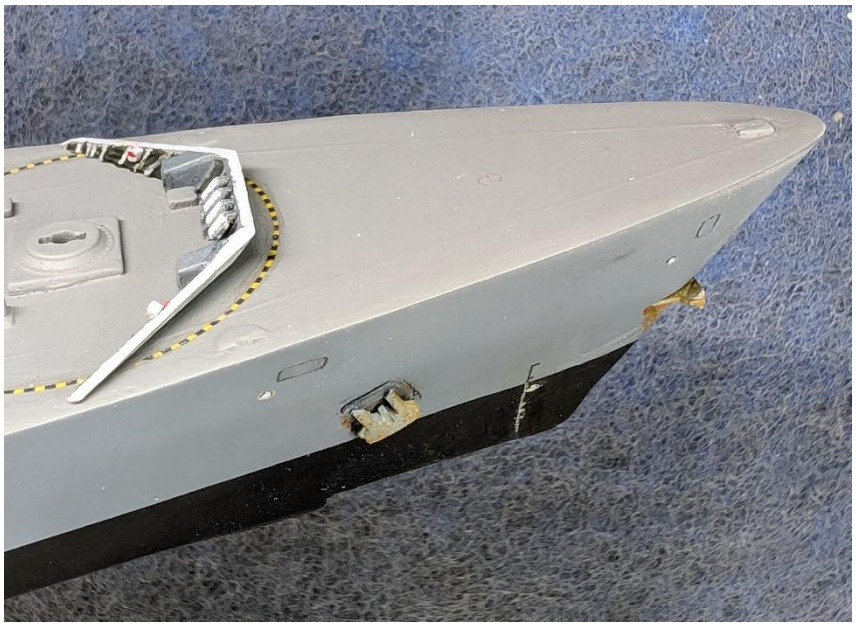
Meanwhile I attempted another corrective coat of the deck grey by brush, thinning with water and using a cat's tongue brush. I scraped away some unsightly edges where masking tape or putty had been, particularly around the warning circle on the foredeck. I also lightly covered the discoloured areas in the middle of the flight deck. Yet again, this came out lighter than the previous finish. I did some experiments with various thinning of the paint, but I could not discern any difference in shade between brush painting with neat paint, thinned with Vallejo thinner or thinned with tap water.

I worked on the breakwater for the foredeck. Reference photos show that the big blocks protruding aftward are a very dark grey with blue hue, for which I used Ocean Grey. The ribs between the blocks seem to be the same colour. As depicted in the kit, the blocks have raised circles on the end. The smaller, outer blocks on the kit part are in fact cubes fixed to the breakwater at a different angle. I carved off the kit blocks and added cubes of 1mm square styrene rod– they are probably ammo lockers for the nearby GPMG positions, judging by the "Danger – Explosives" signs seen hanging on them in pictures (which I added as a red flash on each). I also fixed short length of red-painted 1mm wire from the scrap box and lump of putty to portray the fire-fighting gear that resides just to starboard of the starboard large block. Shadow areas were painted Tire Black,



ribs outboard of the blocks and the outer face Sky Grey, firefighting equipment red, and the top edge of the breakwater in +2 highlight colour. I gave the row of four lockers several coats of paint, experimenting with painting on the grid of lines visible on the real thing, but in the end decided my lines were far too prominent and spoiled the effect. I contented myself with a white spot on each to represent the white labels on them.

After all the mess I had made with my attempts at brush painting the weather decks, I decided to bite the bullet and re-airbrush the centre section of the flight deck and the whole of the foredeck forward of the missile launchers. I carefully masked all the decals yet again, successfully using Tamiya 2mm masking tape for curves on the circle around the gun. I decided to forego the earlier painting of details on the foredeck and repaint them later[18]. I scraped and sanded irregularities. Spraying was straightforward and I immediately removed the tape. Spraying appears to have given an even finish. I immediately risked it by attempting to cut in with brush to get closer to the circle, where dark edges were visible where the tape had been. This worked for once, producing a neat job round the circle. Once dry, I can see that the new sprayed areas are slightly lighter than the previous paintwork; so I attribute the lighter tones not to brush painting, but to the earlier work having been darkened by varnish.



Interior lighting

Inevitably, I succumbed the cute LEDs and decided to install lights in the hangar, boat bays and bridge. They will not be simulating the actual ship's lighting – just allowing viewers of the model to admire the interior detail. They are not really necessary in the boat bays.

[18] Partly because I had realised that the dark Ocean Blue colour for the deck hatches is not right, according to recent photos, and they should be hull colour.

I acquired a pack of 3v LEDs intended for model railways[19]. I tested them with two 1.5v batteries, and also checked that if the supplied resistors are included in the circuit, they can be dimmed.

I ascertained that there are voids in the model that will enable the wires to pass. If fixed the roof of the spaces, the LED's will not be visible from normal viewing angles. Drilling inconspicuous holes will be difficult in the hangar and the starboard boat bay. The port boat bay already has a hole in the roof leading to a small void.

I bought a 16cm long 2.5mm drill – in retrospect 2mm or smaller would have been better. I used it (in a pin vice, not daring to use a power tool) to drill a hole at the top of the back wall of the hangar. Unfortunately, in doing so, and in removing the resultant swarf, I did some damage. I caught the yellow roof crane rail and bent it quite badly, but fortunately it sprung back into place without needing glue. I bent the crane hook. I knocked off the black paper clothes rack from the back corner. I detached both ends of the starboard mezzanine railing. Most seriously, I knocked off the whole of the back mezzanine railing. These repairs would be trivial if it were not for the difficulty of access.

I fed the wires through and tested the light. With some difficulty due the awkward access, I fixed the LED to the roof with CA glue.

Using the long drill from a very awkward angle underneath the model, I drilled two holes into the small voids above the boat bays. Even more awkwardly, I

[19] Evemodel 30pcs Pre-soldered Micro Litz Wire Warm White SMD 0603 LED Light 20cm Wire Resin Cover, £9.99 from Amazon UK.

drilled through into this void from the ceiling corner of the starboard boat bay, as far outboard as I could get. I had to use four successive drill sizes to pierce and enlarge the hole without the drill slipping. I passed the wires through quite easily and glued the LEDs behind the top lip of the boat bay apertures.

I temporarily put the foremast in place and drilled a hole through at just below bridge roof level. I glued an LED to the bridge roof. It is bit bright in this location, and the LED is visible through the windows if you get down to the same level, so I added a diffuser made from 0.3mm styrene sheet. That does the job, although it is still a bit bright and the bridge is unevenly lit.

I need to take care about light leakage around the bridge roof when I finally fix the bridge in place.

I am trying to resist getting carried away with the electrics and trying to motorise the rotation of the two main radar scanners. But I have now looked up motors and viewed videos to ascertain that the search radar rotates at about 15rpm, and the Sampson radar at 30rpm…

Motorising the radar

Of course I am off down this rabbit hole!

I found I already have suitable quiet motors, but not a gearbox – though I do have a bag of gears, pulleys, shafts etc. I ordered a motor intended for this

application[20] – the motor looks similar to those I already have, but the gearbox is a useful shortcut. I think I can get away with one motor, driving both shafts with the help of a drive belt from my stock, which can also gear down the speed for the search radar.

Unfortunately the motor and gearbox, when they arrived, ran a little too fast – 50rpm on single 1.5V cell, and 120rpm on two (3V). I am going to have to slow it down with a resistor, if I am to avoid having to gear it down further. Ordered a set of mixed potentiometers – this is getting expensive. I was disappointed to find I could not slow the motor sufficiently with that, as it stopped before reducing to the required speed.

Examining the model, a vertical path for the drive shaft for the search radar is problematic, as the hangar back wall is right underneath it. I nearly cancelled the revolving radar project, but in the end decided to continue: the drill may miss the hangar entirely, or will just clip the wall in an area that is very difficult to see. I will refrain from replacing the mezzanine railing until the job is done. The drive shafts I have are just over 2mm, so I could use my new long 2.5mm drill. But then if I used 1.6mm brass rod, which I also have, I could reduce the drill size… and I have some polystyrene tubing it fits neatly through, to use as bushes to hold it in place, without binding. The brass rod is not as stiff, but at low speeds that should not be problem. Steel rod is available if I need it. I ordered a 1.7mm drill bit, long enough to drill the entire path (path is 6cm from top of the aft mast to the deck level, drill is 80mm long). The 1.7mm drill looks minuscule compared to the 2.5mm, and is much less likely to do damage. I reinforced the rear of the hangar wall with five thicknesses of 1mm plastic, laminated into a block with Tamiya Extra Thin, to prevent the drill breaking though at an angle and vibrating.

I mounted the motor and gearbox on length of ¼" wood, atop another piece of the wood, to the drive shaft will extend up through the foremast and a pulley wheel on the end of the shaft below the motor will take the belt to drive the other radar. For that I glued the larger pulley wheel onto my 1.6mm brass

[20] M7G DC Motor & Gearbox (1-3V) from Component Shop, https://www.componentshop.co.uk/m7g-motor-gearbox.html.html

shaft, centring it with some Sellotape around the shaft to adjust for the larger hole.

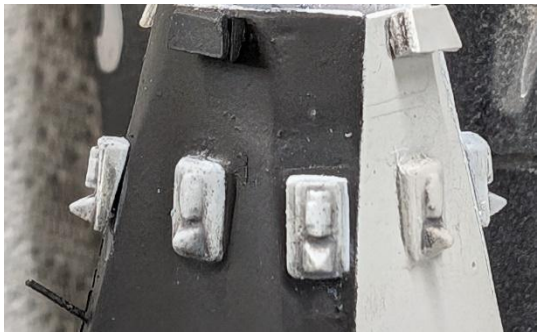
I made a brace to fit inside the foremast, from 16x17mm rectangle of 1mm styrene with the corners cut off. Drilled it with a 2.25mm bit. This will take a plastic bush to support the drive spindle. Glued it in place with Ultra Glue. I also drilled a hole in the kit chassis at the appropriate point, which is slightly forward of centre on the near-square base of the foremast, and test-fitted the motor unit.

I drilled out sme electrical insulation to make push fit caps to fit the radar scanners atop the shafts.

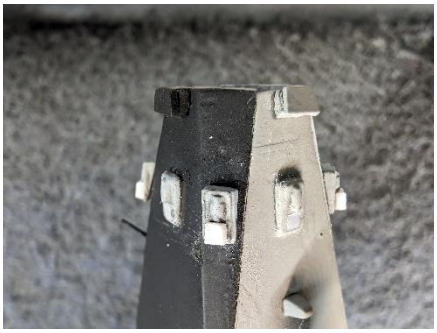
I paused progress with the motorisation until I could solve the speed problem. I am not going to record here my tribulations with motors, gears, resistors and diodes, which distracted me for some considerable time.

Deck details

At this point I was looking at further reference material, and realised that I had missed something. The kit depicts the Outfit UAT Mod 1 R-ESM (Radar Electronic Support Measures) receivers, the eight sensors around the foremast



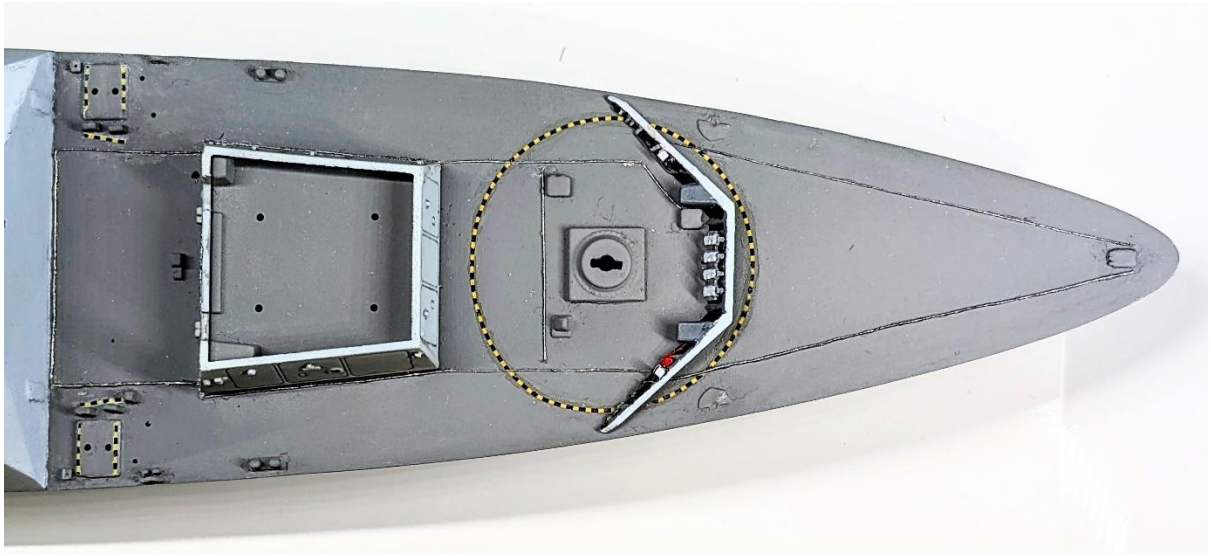
with pyramid-shaped projections. These were replaced by 2015 with the UAT Mod 2 receivers. To change them, I need to remove the pyramids and to add boxes in their place on the “diagonal” positions, leaving the “orthogonal” positions flat. The boxes seem to be trapezium-shaped, tapering towards the top, and have about the same depth as the plinth on which they sit, protruding only slightly beyond the gubbins above them. They are large enough to fill the space available. They sit parallel to the face of the mast.



I cut a strip of 1mm styrene and sanded it back until it measured 1.9mm wide. I then cut it into trapeziums, aiming for 1.9mm wide at the base. These were glued in place. They look rather too thick – should have used thinner sheet. I sanded them down in place with a 180 grit sanding stick.

February 2024

Back to deck furniture. I glued in place the jackstay wire, pre-painted earlier[21]. The trick was to tension the wire to keep it straight. I used VMS CA glue to anchor ends, then Mig Ultra Glue to spread along the length and fix down, minimising glue residues. I used single lengths wherever possible, holding down with a sharp point when turning corners. For the most part the lines were glued over the vestiges of the moulded lines on the kit deck, which seem



to be correct according to photographic references, but I added the transverse piece just behind the turret, which I hope is correct – photos are not clear. Painted out some minor glue spills. I realised (after the picture was taken) that I had put the transverse line too far forward, too close to the hatch. I pulled it off, and was surprised at how easily the Ultra Glue came away without leaving any damage to the painted surface. Re-fixed it further back.

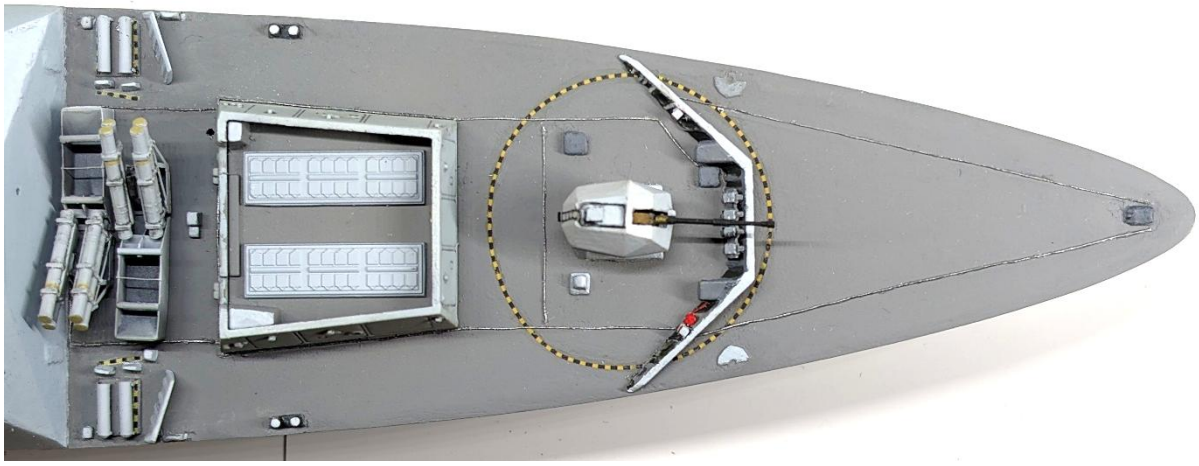
I repainted the hatch covers, bases for the bollards and life raft racks in Ocean Grey. I am unsure about the colour, as there is contradictory evidence – later photos may show light-coloured hatches, but 2019 pictures of HMS Duncan do appear to show dark hatch covers. One does clearly show light grey bollard bases, and another has the bollard tops dark. I suspect these are tricks of the light, and all are the same grey, but I am following the pictures for light and shade.

[21] See page 95.

I painted the bollards and fairleads in bronze. The bright bronze paint looks far too bright for the fairleads. At this point I noticed that she does not have the kit's pair of small bollards just inboard of the starboard fairlead[22], so I removed those with a chisel blade and sanding stick. The other bollards should have flat tops, not domed as depicted, so I sanded them flat.

The blast deflectors (if that is what they are) behind the decoy launchers looked very thick – they should be thin panels. I thought about replacing them, but first tried to pare them down with a chisel blade. This was remarkably successful and made them look much better. I also cleaned up the parts for the breakwaters protecting the decoy launchers and sanded them down on the flat side so that they were much thinner, especially at the top edge.

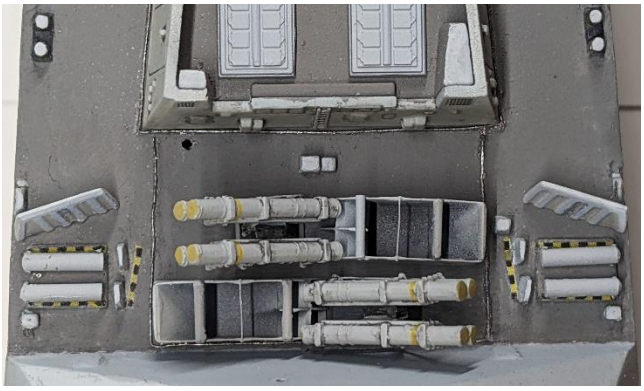
I painted all the moulded deck features with a variety of shades representing Light Weatherwork Grey: the gun turret mounting, the RAS capstan covers ("step" objects), blast deflectors, fairleads and the tops of the bollards. The near-white highlights on the bollard tops and deflector edges look great. I also painted the small breakwater parts. The foredeck has now really come alive. I touched up the deck paint, including where the bollards were removed; I no longer have problems with brush painting contrasting with the airbrushed



areas, so the previous tone difference was attributable to matt varnish. I glued the main and secondary breakwaters in place, having first trimmed the ends of the jackstays where they passed under the breakwater, and painted in gaps in

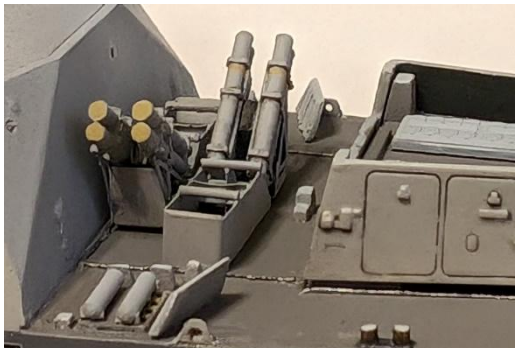
[22] In fact, these do exist: the problem is that the fairlead is in the wrong place. See page 106.

the yellow dashed circle that would still be visible with the breakwater in place: this decal was not well positioned (and is not circular!) but I used yellow paint and a black 0.1mm marker pen to close the gaps, taking the opportunity also to touch up some other dashed lines.



I also fixed the decoy launchers, made earlier. [23]

More research, and I found that the bases for the foredeck GPMG positions are only visible in the form depicted in the kit in one photo. My guess is that these are raised platforms that rotate, they are depicted



Harpoon launchers in these pictures were not fixed and were in the wrong positions!

[23] See page 69 &ff

facing inward in the kit, and they are normally stowed when not in use. Perhaps the plates fold up from the “platform” leaving the gunner standing on the deck? The plates are raised a little off the deck and I have little doubt, from pictures, that the gunner stands on the deck and not platform. When erected, there are five armour plates in a semi-circle, hip high on the gunner. There may be upward extensions for more protection. I am not convinced that these positions are ever used at sea, as they are very exposed. I can only find one picture of them when the jackstaff is not also visible, except where the ship is obviously in the Suez Canal or coastal waters. Much as I would like to model them, I have decided not to. The moulded bases will need to be scraped off! So I did that, sanded the areas, filled a crack and repainted.

I was about to fix the Harpoon launchers when I remembered the triangular holes in the blast deflectors on the real thing[24], and decided to paint them on. This went badly wrong due to paint running under masking tape, and when I tried to scrape off the runs, it went straight down to bare metal. The whole forward side of both deflectors now needs repainting! Primed the bare metal, cut triangles of masking tape and resprayed the outer wall. Still not happy with my masking technique. No leaks this time, but despite best efforts to be precise, the tape just did not give straight edges and sharp angles. Touched up with a brush.

Back to the reference pictures, and concluded that the top edges of the missile enclosure cannot be the highlight grey I have used. There may be some anti-slip material or similar on them, but they appear medium grey even in bright sunlight. Repainted them in Medium Grey. The thin rear wall stays light, but the box just inside it is Medium Grey. Dry fitted the fuel pipe behind the missile enclosure.

Applied a very thin medium grey pinwash to the decoy launchers, blast deflectors, fuel pipe and missile silo covers, plus the doors opening onto the foredeck. It hardly shows in some places, but it gives bit of depth to the missile hatches, and left minimal staining despite being applied over matt paint.

I tried to fix the missile enclosure wall, but despite sanding the outside of the former and the bottom edges and inside of the wall part, I could not get it to

[24] Previously noted on page 67.

go all the way down, even using a hammer. Tried to remove the Ultra Glue with water and a cotton bud, but I will leave the residues to dry before cleaning up further and trying again.

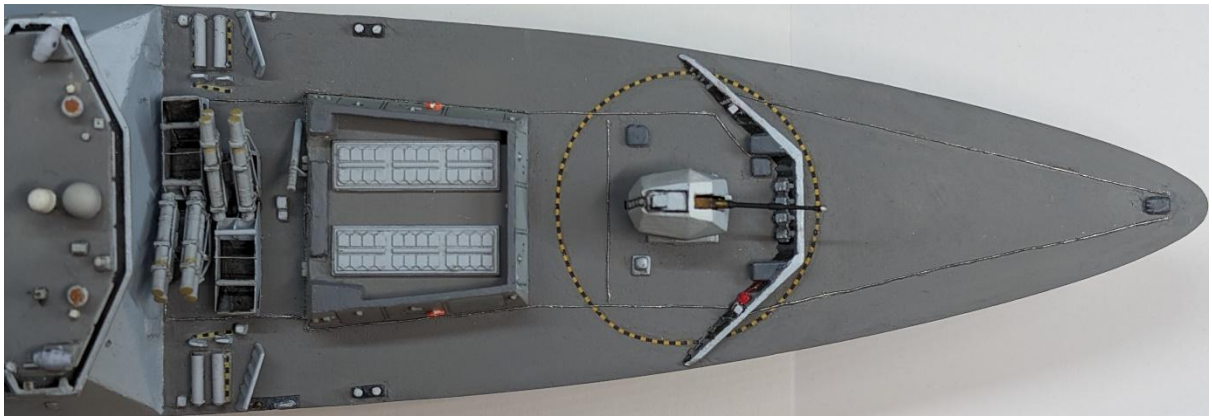
I glued down the missile silo hatches and the Harpoon launchers. In the course of looking at reference pictures for that, I noticed another error: I was wrong to think that the two small bollards, which the kit placed immediately inboard of the fairlead, did not exist. Instead, the fairlead is displaced forward. The two bollards are tucked hard under the starboard breakwater, so hard to see in pictures. They and the fairlead seem to stand on a common base. Fortunately, when I scraped off the bollards, they came away intact as single piece, which I kept. I removed the fairlead similarly and glued them both on single piece of styrene as the base. I made good the deck area, after sanding, with Perfect Plastic Putty, filling in the notch in the hull side below the original fairlead position – which shouldn't be there anyway. A touch-up of hull colour will be needed. The breakwater came loose, which makes the deck repair easier.

I sanded the surfaces hard to get the missile silo wall to fit. Eventually it did, with a lot of force, and I superglued it in place, though there is small gap on the port side. The tops of the two blocks inside the missile enclosure need to be the same colour as the top edges of the walls, with no gaps. I filled the gaps between the inner and outer aft walls, still not having a good technique with filler. It took at last three cycles of applying and smoothing before sanding. This would have been a lot easier if I had fitted the missile enclosure before gluing on the Harpoon launchers and silo hatches, which are in the way. The new grey top paint scheme is of course ruined by the filler, but I am not happy with the colour anyway – Medium Grey has a green tinge to it that does not match the original.

Another short distraction at this point: I found a strange rectangle of metal on the floor, with various appendages. I soon recognised it as one of the boat bay balconies, fitted long ago, that had fallen off and been trodden on. Miraculously, I managed to bend it back into shape using two pairs of tweezers, without anything breaking further. A couple of dabs of CA glue and some touch-ups of scratches and it is ready to go back on. I flattened the bent handrails using parallel pliers.

I went through a long, iterative process of filling and painting the various surfaces of the missile silo wall, then repeating until I was happy. I also re-did the silo wall tops a number of times to get the right colour, amid some confusion about what is right. I used a white and black mix for the grey to top the silo walls, after a fail with Tire Black and white, which again yielded a greenish, field grey colour. I also repainted the top of the funnel in a dark grey, as it does not look like the weather decks. Repainting a damaged panel on the outside of the silo wall was very frustrating, as I could not get a good colour match and must have repainted 20 times.

I selected the best two of the rather poor life rings and largely repainted them to get more accurate white stripes. I glued them in place. I worked on the PE nameplates but could not get satisfactory clean lettering on one of them. I then looked at the plates against the decals, and realised that the PE plates are much larger than the decals. I measured some photos and determined that the nameplates should be about 2.5mm long – the PE plates are 4.5mm, so far too large. The decals are about right. But I also ascertained that the plates are hardly ever in place when the ship is at sea, so the correct thing to do is leave them off.



I painted the muzzle brake of the gun silver, and I think that is the foredeck finished, apart from the railings.

Midships fittings and weapons

I have already removed a life raft base (to make way for the Sea Sentor torpedo decoy launcher)[25] and the aft stepped RAS capstan covers (in the wrong place) on each side of 01 Deck, the weather deck that runs the length of the middle part of the ship.

I cut off and cleaned up all the life raft containers. The attachment points destroy the ridge that should run round the ends. To my disappointment, the unused pair omitted from the foredeck cannot be used, because they are far too large. The two pairs on the flight deck are also large, but the difference will not be noticeable. I need six pairs of containers for 01 Deck but I only have eight singles. I cut four lengths of 1.6mm styrene rod to make the missing ones – if they are put in the lower positions, I hope the lack of detail and slightly smaller diameter will not be noticeable.[26]

[25] See page 42.

[26] Investigated availability of commercial parts, but the only 1/350 life raft containers I could find were a discontinued product from HS Models, only available at excessive cost from the US.

I also cleaned up the parts for the Sea Gnat decoy launchers (the two six-barrel mortars on each side). The kit parts are pretty indistinct, so I will look at making new barrels. Each launcher has three staggered pairs. 0.4mm rod should be about right for the barrels.

I glued two lengths of 0.6mm Slaters plastic rod together with Tamiya Extra Thin, in shotgun configuration, then used the guillotine cutter to cut what should have been even 2.5mm lengths – my hand-held length stop must have moved, because they were very uneven in length. Nevertheless I persevered, using the shorter lengths in the middle of the sandwich. Three pairs needed to be joined into a six-barrel launcher with a step of about 0.75mm between the ends of each pair. I tried building a jig in the form of a short flight of steps out of 0.5mm styrene, but the small parts sticking to the tools made it hard to use, so I ended up doing most of the gluing with the parts in my fingers, judging the steps by eye. The result is going to be much better than the kit parts. I sanded down the least good end of each and attached to a base of thin styrene sheet. I added a block of 1mm square section strip as the control box at the back of the units.

01 Deck accessories: Sea Sentor torpedo decoys (centre), Sea Gnat missile decoys (left) with Airfix versions for comparison (front) and doubled life raft containers (top right).

I wanted to extend the barrels on the Trumpeter Sea Sentor torpedo decoy launchers[27] – or rather, I think these longer tubes are the actual munitions, so the Trumpeter part might be correct when unloaded. I sanded the ends of the Trumpeter barrels to flatten them, then glued a length of 0.4mm styrene rod in the centre and onto each stump (with Tamiya Extra

[27] Scrounged earlier. See page 42.

Thin), trimming off after fixing, so the rod provided a handle whilst positioning. That took some time but gave a pleasing initial result, through the ends were uneven and needed to be trimmed or sanded flat. I put spot of Tamiya Extra Thin on each launcher, to try to strengthen the assembly, but flooded them, so much of the styrene looks as if it may have melted together. Not so good for detail, but may be better for strength. Once dry, I accepted one of them, but the other had collapsed, so I pulled off the barrels and started again on that one. This time I put stub of 0.9mm rod in the centre, just the right size for the other outer barrels to fix to it as a former, which was much easier. A central barrel was fixed to the centre stub.

According to photos the barrels (or cylinders) should be much thinner and distinct from each other, but I think what I have is fair representation in this scale. Wire barrels would be hard to do neatly.

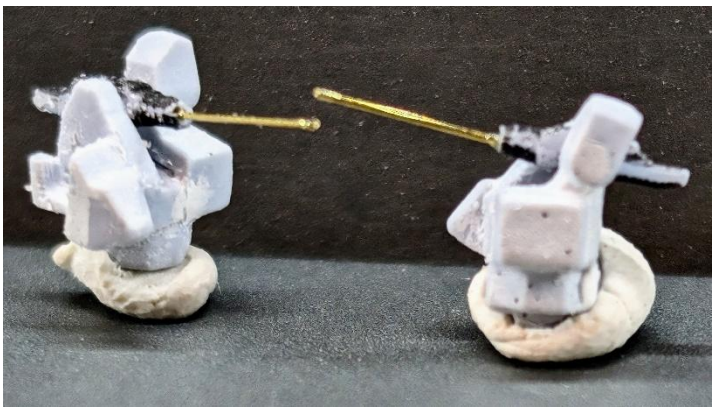
01 Deck has six pairs of double life raft containers. Six single containers are provided in the kit, plus doubles for the flight deck and foredeck. I was disappointed to note that they are three different sizes! I had intended to use the redundant foredeck double containers on 01 Deck, but they are far too big and would not match the others. So I made four extra containers from plastic rod – I will have to manage without the details on them, which can largely be hidden behind the bulwarks. I glued the containers together in pairs – I don't think the lack of support for the upper container will be noticeable.

Going to my parts box, at some point I had lost one of the stepped RAS capstans that I removed earlier, so I made a replacement from laminated 1mm styrene sheet. The original part was then found!

I also found that the topmast (JTIDS antenna) had somehow become bent over at 90° in the storage box, despite my use of foam to protect it. I as able to bend it back into shape, but it is not perfect. I may have to replace the pole with brass.

I cleaned up the “picnic basket” devices for the small deck behind the foremast and trimmed off the “handles”, replacing them with 0.25mm wire. Considerable difficulty in getting them into the right place without bending them, and hoping that Ultra Glue will keep them there. I later reinforced the joints with some CA.

Cleaned up the parts for the DS30B Mk I small-calibre gun. Examining lots of photos, the Airfix rendering of the gun mount is not bad. The seat on the right is not always present, or could be separated from the body, and sometimes there is an additional box on the right-hand side. There is a yellow or orange warning label on the boxes, both sides when both fitted, and on the front slope. Only the barrel is black (or dark grey), and it does not flare out at the end – I managed to break one of the kit barrels in handling, so I will replace them both with brass. The real gun is 3.5m long, which conveniently equates to 1cm in scale and allowed me to cut the barrel length. There is a small, slim muzzle brake. There is a dark control panel in front of the seat. I glued the parts together and filled joints. I used a razor saw to separate the seat from the mount to its left. I cut off the plastic barrels and used the smallest drill I had, 0.3mm in the DSPIAE drill, to drill out the location for the new barrel, made from 0.2mm brass rod. Whilst gluing, I dipped the other end in VMS CA Slow and the residue was sufficient to give the impression of the muzzle brake.



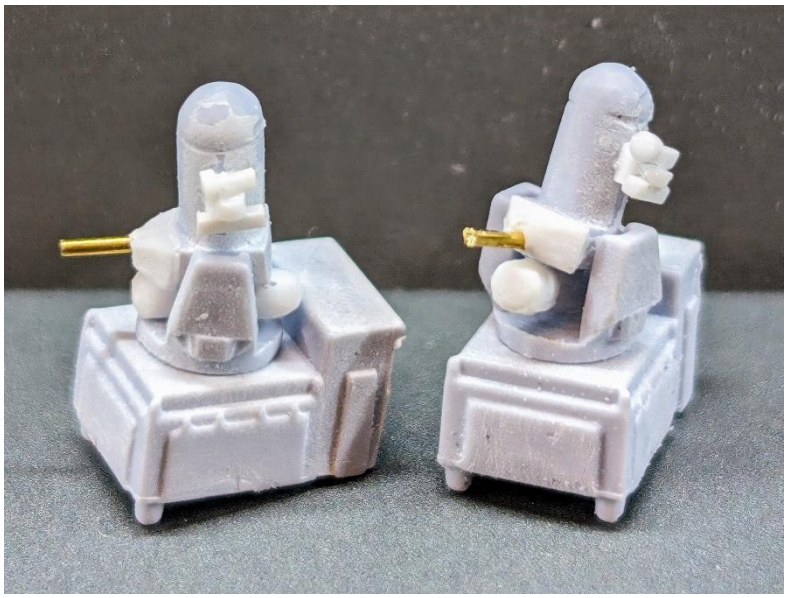
I cleaned up the parts for the CIWS. In doing so, I unwittingly cut off the barrel parts, which looked like pieces of flash. In fact they were so bad I would not have wanted to use them anyway! The real thing has a triangular frame around the barrel, difficult to model except by way of a solid part. The barrel is quite long, especially when you include the frame: the uncovered part is about the same length as the diameter of the dome, and the frame half as long again.

Having measured the base for the frame, I laminated three pieces of 0.5mm styrene to create the vertical thickness of 1.5mm, using Extra Thin. I then used the guillotine to cut 2.5mm squares of this material, and quartered those diagonally to make 45° triangles with a 2.5mm base. I trimmed off the top angle. I made a number of these and selected the two best.

I then used a 600 grit sanding stick to taper the top and bottom of the triangles towards the top, creating the required flattened pyramid shape. I tried sticking them down with double-sided tape for this, but in the end did most of the work holding them in my fingers. Despite dropping them repeatedly, very pleased with the outcome.

The cylinder slung under the gun[28] should extend forward and backward. I added some styrene rod to extend it, rounding the ends by sanding.

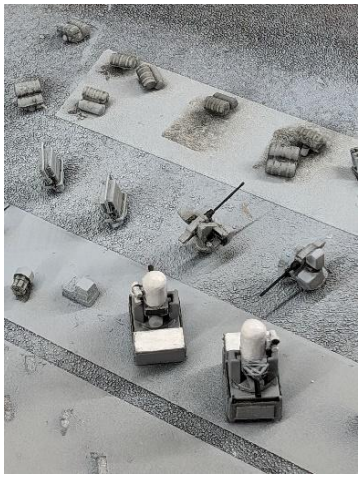
There should be two parallel long boxes (the FLIR equipment added to the CIWS in Block 1B) on the left side of the dome, omitted in the Airfix parts. In fact these boxes have circular outer ends (upper one black on Duncan), but they are both square in section. There is large horizontal disc between them. They are stood off from the dome by a box or similar. So I fixed a small scrap square of styrene to the left side of the dome. To that, I attached the edge of a disc of styrene, set horizontally. I used 0.5mm square section styrene rod to make the two long boxes fixed top and bottom of the disc, but I first fixed a small slice of round rod to the end of the upper, shorter

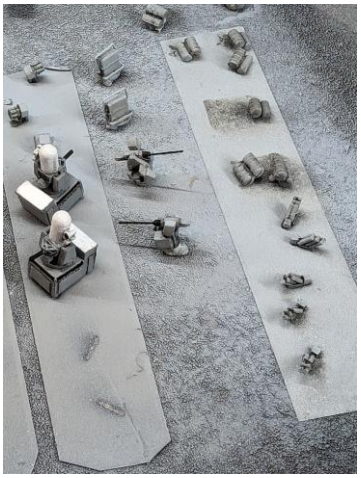


[28] Seems to be the ammunition storage. There is complex belt feed device on the front, but too small to model.

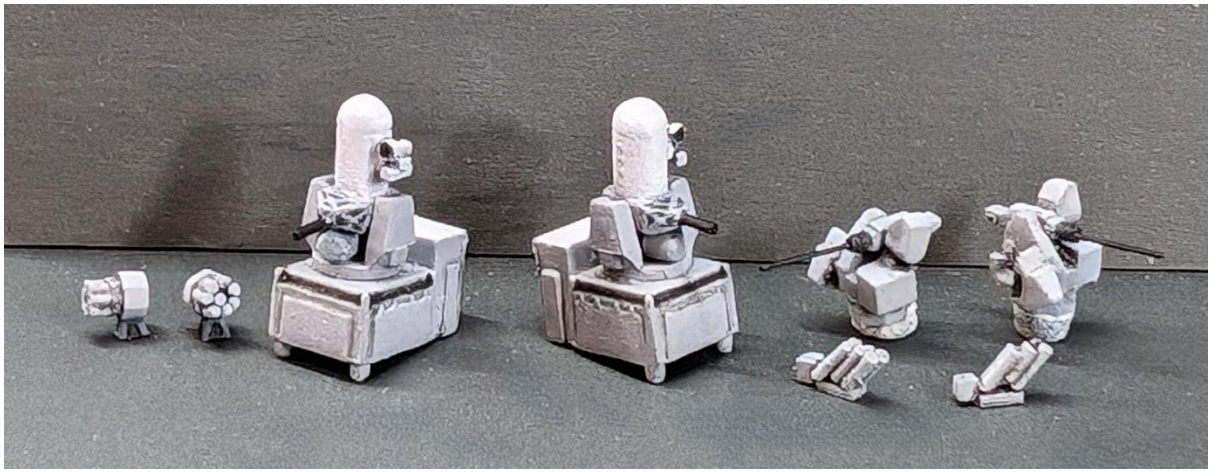
one, to create the round end face. The lower one should also have round end face, but the disc there is very thin and could not easily be modelled, and would barely be noticeable. I fixed the gun mantlets made earlier, drilled out the centre and put in a piece of 0.5mm brass for the barrel. I used a diamond file to clean up the ends of the CIWS and 30mm barrels.

I primed and then painted all these small parts by airbrush, with some shading. I previously observed that the Phalanx CIWS seems to be a different grey, so I used Vallejo Light Grey for them. I then painted the barrels and gun mantlets in Panzer Dark Grey and added the framework with fine brush in Light Grey, repeating on each surface until I was happy with it. The white top of the CIWS and the top of the back box of the base were painted by brush, in full white, rather than my usual Insignia White, as I wanted these to stand out.

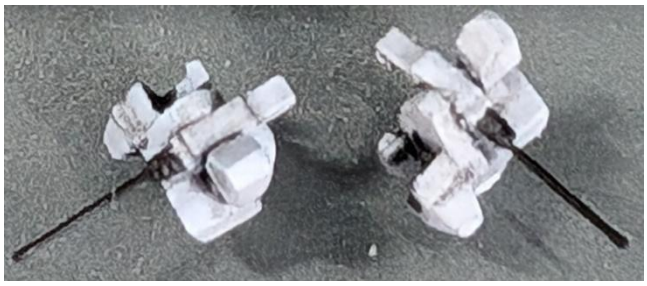


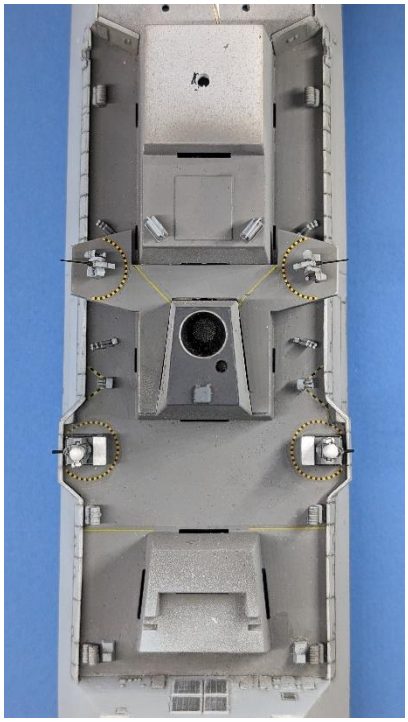


I hand painted the 30mm SCG barrel black, and knee hole on the right side and instrument panel in Panzer Dark Grey. The barrel and FLIR lens of the CIWS were also painted black.

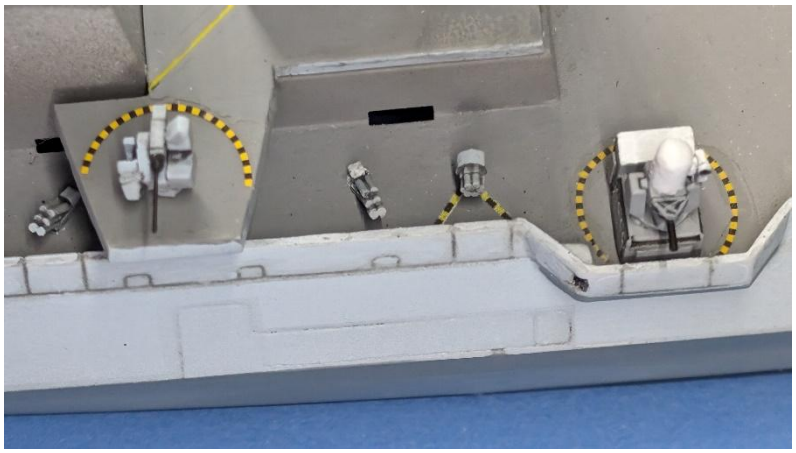


I then pinwashed all the detail parts with dark grey oil paint, plus black for the deep shadows around the CIWS platforms. I was again pinwashing without gloss coat, so there was some spreading of the wash across the surfaces, but I





cleaned up with thinner on a brush and cotton swab, and touched up the paint on the CIWS by brush. I fixed all these recent small parts in place with Ultra Glue, except that I



decided not to glue the larger weapons just yet, in case of later damage; they also need to have warning sign decals affixed. There is a touch of glue residue on the deck that did not come off with a wet brush, so may need a paint touch-up.

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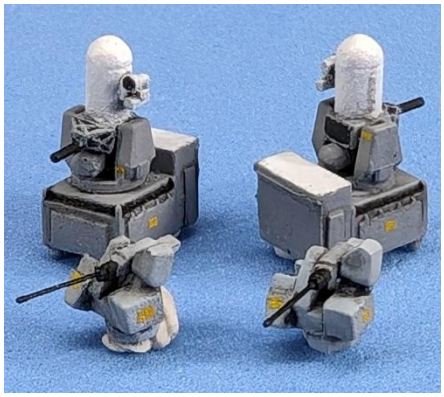


Disappointed to find that all the yellow warning sign decals in the Atlantic Models signs and circles set[29] are too big for my weapons, so I had to content myself with cutting plain yellow rectangles from the generic yellow stripe decals I have in stock. Applied them with Micro Sol.[30]

I painted two lengths of 0.5mm square styrene to form the bridge wing struts, but I won't fix them until the bridge is fixed.

The only thing now obviously missing on 01 Deck is the pair of M134D miniguns. The positions for them were added earlier[31]. The miniguns are 80cm long (probably excluding handles) and the barrel is 8cm in diameter, so I scratch built them from two lengths of 0.3mm wire, with a small block of 0.5mm styrene on the back end, and the spent casings discharge chute made from 0.25mm wire. This took much fiddling about and many errors. I had studied many photos but had to curb my enthusiasm for details and just live with these crude impressions. After the photo was taken, I added a mounting post on the right-hand side from 0.2mm brass rod. Primed in black, then painted NATO Black, with the chute in Tire Black.

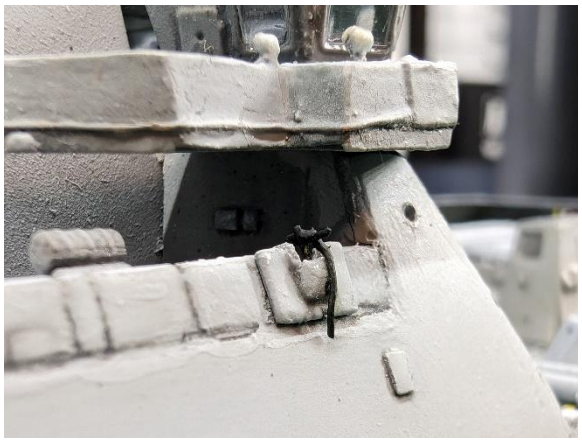
[29] Royal Navy Deck Warning Circles and Placards Atlantic Models No. ATDec 12

[30] 30mm SCG, yellow labels in the slope on the front of the mount and the left side. CIWS, yellow label in the middle both sides of the base, small labels top right of rear of mount and bottom right of front.

[31] See page 20.

I went to fit the miniguns to the model, which meant bending the chutes out of the way: they need to run forward and then turn down, to fit in position. In doing so I first destroyed one of the guns, rebuilt it, then, in the space of five minutes, dropped and lost them both, despite extensive searches. How parts can vanish when dropped onto a white board from a height of a few centimetres is beyond me.

I remade the guns, slightly simplified by using only 0.25mm silver wire, plus 0.2mm brass rod for the mounts. Length of the guns is 2.3mm, correct to scale. I will omit the detail of all the further pain and frustration of the building, painting and fitting. I eventually glued the guns in place without the mount parts, relying on the chute for support, then added the rod mounts, trimming them to length in place. The end of the mount rod rests on the plastic bulwark – the plastic is far too thick for them to sit behind the bulwark, as originally intended. A touch up to hide cracks in the paint and the cut end of the rod, and voilà! The miniguns are finally done.



Flight deck GPMG positions

Next to do was the armour plate for the GPMG positions over the fairleads on the flight deck. The armour plate on the flight deck fits around the fairleads, but the fairlead is not central. The plates are the same height and probably same width as a section of railing, which is 4x5mm. They slope back at the same slight angle. They are supported by two pairs of black legs on the back, the top one attaching to the top corner of the plate. The aperture is central, and the upstands either side look square, probably each ¼ of the width, which

makes the aperture 1.25mm deep and 2.5mm wide. I cut number of 4 x 5mm rectangles of 0.3mm styrene sheet. I thought I had a stroke of genius when I decided to cut two 1.25 x 2.5mm rectangles and stick them on to the position of the apertures, they cut around them, but the results were still slightly uneven. After cutting and filing three pieces, I selected the two best.

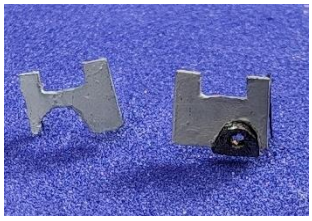
Realised that the starboard fairlead is too far forward on the kit, and would make it impossible to fit the GPMG shield. I managed to slice the fairlead off cleanly with the chisel blade. The fairleads should be opposite each other, athwart the decal red line.

Cutting the shields to fit over the fairleads was tricky. I first cut a triangle in the approximate position, then enlarged it into the rounded shape of the fairleads with a round file, holding it firmly in the haemostats as close as possible, as the thin sheet tended to split, and the thin part facing the hangar was very vulnerable to damage.

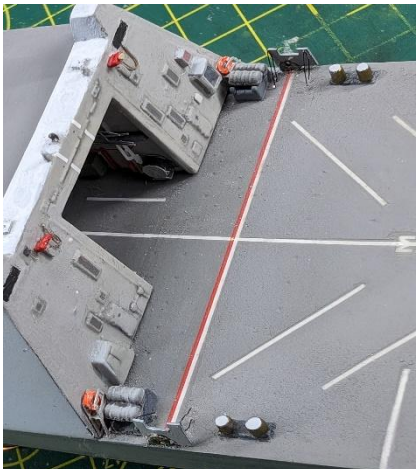
I primed and painted the shields, and some 0.1mm nickel rod in black for the supports. I bent the wire into four U shapes, so the base will fix to the back of the shield and provide the two legs on each side of the shield.

I started to fix the removed fairlead to the shield, and suffered another small disaster: the fairlead shattered between my tweezers, and the larger part flew off into oblivion. However, I found it surprisingly easy to make a (better) replacement, cutting a strip of 1m styrene 2.5mm wide, rounding the end with a file, slightly angling back the faces, drilling with a 0.8mm drill, countersinking the holes each side with my bead reamers, and cutting off the finished part from the strip with a razor saw.

I reviewed the photographic evidence and concluded, with some doubt, that all the deck fairleads should be white metal colour, though perhaps with a hint of bronze. I mixed Silver, Natural Steel and Bronze to a suitable shade (predominantly Silver) and repainted all the fairleads by brush. I glued the shield onto the newly-made fairlead.



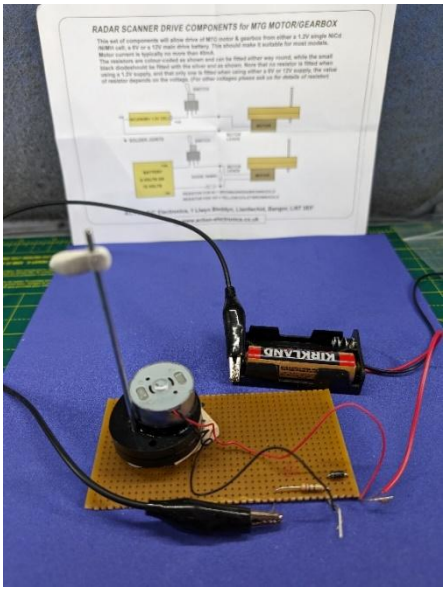
I used VMS Flexy CA to glue the wire supports to the top corners of the rear of each shield, then bent the legs into place before trimming them to length. I then fixed the shields and the fairlead in place. The guns will be added later.



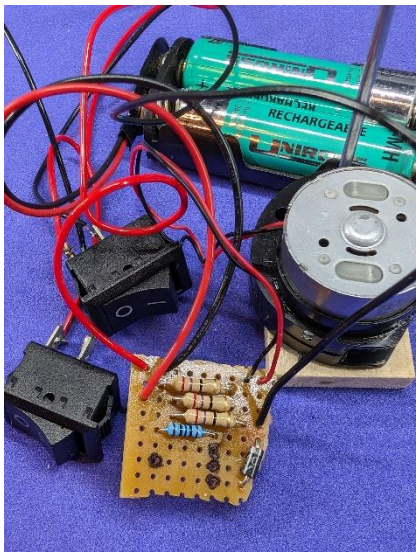
Before alignment of shield legs

Back to the powered radar

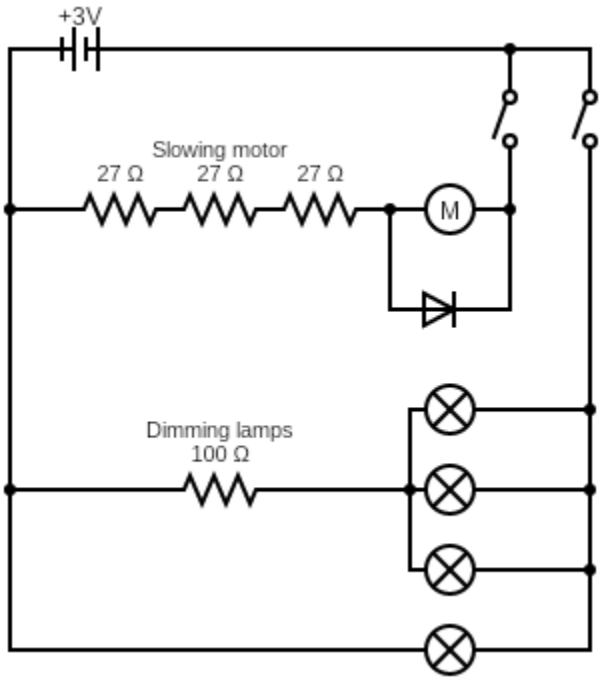
I messed around some more with circuits and resistors. I decided upon two rechargeable batteries delivering a tested 2.9V, with three 27Ω resistors (measured 80Ω combined), which turns the motor at 30rpm, the required speed. I soldered everything and noticed a reduction in speed to 26rpm, disappointing but acceptable.



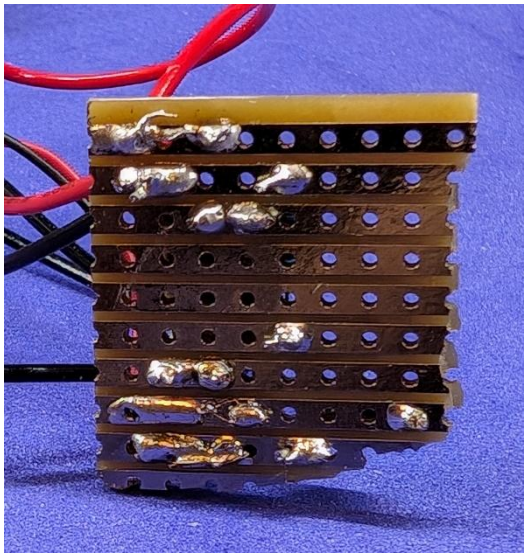
I temporarily connected the LED lights in the model, soldering an extra switch into the circuit for them. The bridge and boat bay lights are too bright, and need dimming. I found that a 100Ω resistor does this perfectly. The lights dim when the motor is switched on, but the motor does not slow: I believe this is due to "back EMF", but have not found any way of stopping the effect, short of separating the circuits completely. A diode across the motor terminals has no effect; presumably it prevents a net reversal of the current due to back EMF, but not a voltage drop on the circuit.



Having arrived at satisfactory electrics, I bit the bullet and took the irrevocable steps to modify the model to accept the motor shafts. Using the

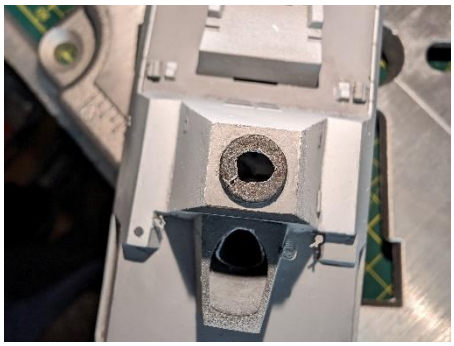


Circuit diagram as built. The undimmed lamp is in the hangar. The EMF protection diode is probably unnecessary.



Dremel (at its minimum 1,000rpm) in its drill press, I attempted to drill the vertical hole for the smaller shaft through the aft mast. This went badly wrong. The long, slender drill bit was not stiff enough, and was able to oscillate wildly as it cut. It also generated a lot of heat, melting the plastic and coating the drill with it. I knew there was risk of it clipping the hangar, but it went well off course into the hangar, creating a scar down the back wall and drilling a hole in the floor, well off centre and aft of the vertical.

I tried again drilling from underneath, but this time the path was too far forward by about ½ cm by the time it reached the top. With lot of filing with round files I managed to open up the hole and open an almost vertical path. I will need to fix the radar via a stiff tube in a close-fitting hole so it stays horizontal despite the slight slope of the shaft.



I cut the cruciform braces holding the Sampson radar dome onto its base part, leaving the arms as potential supports for the shaft, or for a vertical tube attached the radome.

All the rough handling of the model caused some more damage. One life raft was lost and

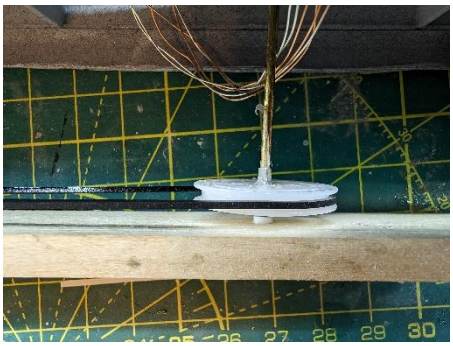
found. The loose “picnic baskets” fell off and were damaged. Worst of all, one of the boat bay mezzanines fell off at some point, and was lost. Next session, one of the decoy launchers fell off, and I knocked off one of the Harpoon launchers. One of my new GPMG shields also came loose.

I was still considering giving up on the motorisation project, as it was consuming disproportionate time and effort, and risking more damage to the model by excessive handling and inverting. I looked at mounting the components on the wooden strip, and found that the motor would not readily fit in the configuration I had intended; the slightest sideways pressure on the shaft will brake the motor, so it needs to fit easily. Despite trimming the edges of the plastic motor holder, the motor will not quite fit with the shaft fully vertical and the motor forward of the shaft, as the motor housing conflicts with the kit bulkhead below the bridge. I will have to reverse the motor fore and aft, so the shaft is forward of the motor body. I split it off the wooden base I previously stuck to it and glued two fillets of timber to the wooden base as motor supports, with space for the drive belt to run between them, underneath the motor. I used a Draper chisel blade to reduce the wood thickness below the motor, allowing space to pass the drive belt underneath the pulley wheel, allowing the drive belt to be added or removed after gluing the motor in place. I then glued the motor on top of the fillets with epoxy.

I ordered some more drive belts, as the largest I have is going to have too much tension and will stop the motor – it needs to be quite loose. I also have not ruled out replacing the motor, but a different design would mean rethinking the means of driving the two shafts.

The largest belt in the new set (nominally 135mm doubled length) was still a bit on the short side, with more tension than I would like: it’s clear the belt tension adds greatly the motor load. I fitted the motor, front shaft and wooden base into the model and fed the smaller aft shaft through the aft mast holes to mark the position on the wooden base, using a piece of Blu Tack – after more heavy sanding with round

files to open the saft path as vertical as I could get it – the hole must be nearly through the hangar wall.



I drilled the shaft position part way through and glued in a short section of 3.2mm plastic tube as bush to hold the shaft end, and trimmed the shaft bottom, sharpening it with a diamond file to minimise friction, and adding a drop of silicone lubricant. I then tested the whole motor system with both shafts and the drive belt installed in the model.

The tension of the drive belt was clearly braking the motor significantly, to the point that it could hardly start; when it did, the speed was greatly reduced. I found that by shorting out resistors, I could get much better performance than

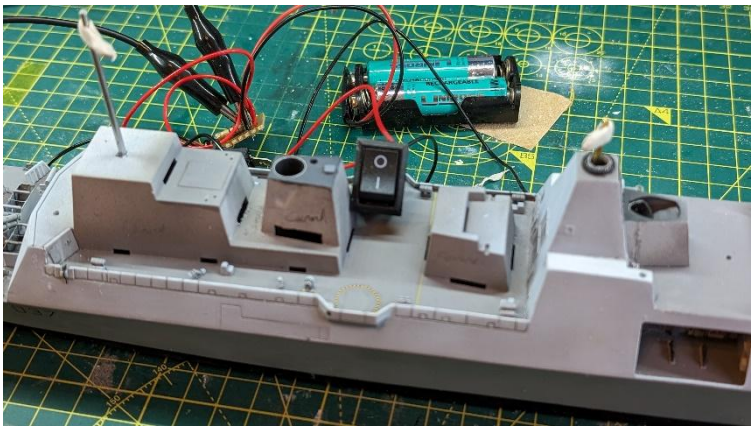
I had before, with more reliable starting. I will just have to recalculate the resistance needed to slow the motor to the correct speed, and change the resistors used again! At the moment, two 27Ω resistors is close (10 revs in 18s, or 33rpm[32]), but I realise I still have a cross-brace across the model hull that must be interfering with the running of the drive belt, so that brace needs removing before I do final speed adjustments. I am relieved to see that the rotation speed of the aft shaft is half that of the forward shaft, as required.

I used a diamond file to open the hole at the top of the aft mast to a 4.7mm circle, exactly fitting the tube I intend to fit there to seat the radar scanner.

Before removing the lateral brace that interferes with the path of the drive belt, I glued in strips of 1mm styrene as cross-braces, hoping to avoid any distortion of the hull when the lateral brace is cut.

[32] One 27Ω resistor gives 60rpm.

I glued back all the small parts that fell off in handling.

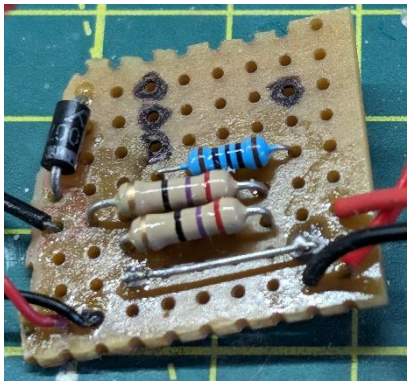


Another problem: I realised that the wooden base was not fitting fully inside the hull, because the motor casing was again fouling the kit sides. I realised that whilst the shaft was central, the motor housing was offset to one side. I managed to break it off the wooden supports and re-fix it, testing both shafts for fit in the model before the glue dried.

I wish I had paid more attention to how the wooden electrics base was going to be fixed to the model. I was vaguely thinking that it would fix to the eventual scenic base, with some sort of access in case it needed working on, or to change batteries. On reflection, it would be better fixed to the model, by screws into wooden blocks attached to the model. That way, a cut-out in the permanent base could allow access without fancy securing mechanisms, and I can fit and adjust the radar scanners without waiting until the full base is made. The battery holder should fit in the stern of the ship, though I may need to increase the cut-out in the underside of the model.

Had I thought about this before, leaving the electrics base a bit longer at the forward end would have allowed me to put in an easy fixing point. As it is, both fixings will have to be towards the aft end, and one will have to be in the middle of the drive band. I made two wooden blocks, one 2cm thick and the other 3cm, allowing for the 6mm thickness of the base. The taller block has cutouts either side to avoid fouling the drive band. I glued these in place with epoxy.

I chose two screws and drilled holes in the electrics base to take them, countersinking the heads. I then marked the hole positions on the blocks through the base holes and drilled them with two sizes of drill. But when I came to put in the screws, both blocks split and one came away. I really regret the motorising project – all progress on the model has come to a halt. I glued the split blocks back together and resolved to drill a larger pilot hole in them before re-trying the screws. I glued a fillet of timber to the electrics base to support the circuit board.



I cut off one of the three 27Ω resistors and soldered a jumper wire across its terminals. With two resistors in the circuit, the speed is close to the target 30rpm, but seems to vary from one test to another, I am also concerned that occasionally, the motor fails to start, for no obvious reason. I will have to try a speed adjustment once all the parts are in place and the load on the motor is known.

I fixed the circuit board with a spot of PVA, hoping that I can remove it if adjustments are needed later; half-forgetting that I will definitely have more soldering to do, as the lights are not connected yet. I need not have worried, because it fell off next day. The blocks also split again when I tried the screws in larger holes – the wood splits easily along the grain. Drilled even larger holes, so the threads will barely bite. Tidied up the wires with some Sellotape, mainly to keep them from fouling the drive belt. Eventually got the base screwed on without splitting or breaking off the blocks. I must have miscalculated thickness, as

the base lifts the model by couple of millimetres, and the bow sits slightly high, but that won't matter if I cut an access hole in the base for the electrics base to fit into. The positioning of the shafts is good, but now the motor will not start and run reliably – something must be braking it.

On further examination, I realised that the issue is with the position of the screw holes. The screws are dragging the motor and electrics base aftward a couple of millimetres, and that is enough to press the shaft against the hole in the foremast base and stop it running smoothly, or at all. I put a temporary jumper wire across the resistors to get the motor running more vigorously, and without the screws, the motor and shafts turn just fine. I will use router bits in the Dremel to turn the screw holes into fore-aft slots, to allow adjustment of the base position.

When all is in place, the forward shaft sits just below the foremast top. The aft shaft projects 1cm above the mast top, so will need shortening; the shaft still turns nicely inside a 3.2mm styrene tube inserted vertically into the hole, which is promising for the eventual fit. I am concerned that with the shaft being slightly angled, the rotation of the scanner might be eccentric.

I routed out the screw slots, first doing the countersink channel and then the actual slot. I am inexpert with the router attachment for the Dremel and careless in the way I secured the workpiece, so I ended up with a terrible-looking result, but I think it will do the job. The motor unit broke off during handling, so I re-glued it, slightly further forward to maximise the gap between the two shafts and make the aft shaft as vertical as possible. I used the Dremel to sand away a bit of the aftward wooden block under the model, in case it might foul the pulley wheel on the aft shaft. When re-assembled into the model and screwed in, the motor ran smoothly (still at the higher speed) and the shafts turned nicely, even with the foremast in place – I was able to enjoy a test-fit of the mast, bridge and scanners with Blu Tack and watch the scanners go round.

With a cutting wheel in the Dremel I hacked out a larger hole in the ship's underside to put the batteries in the space under the flight deck, but found that they won't quite fit: I had forgotten that there is cross-brace in this area.

Finishing the foremast

Getting fed up with the endless motorisation project, in parallel, I resumed work on the model proper, with the foremast. I primed the new sensors ready for painting, and re-fitted the black mast-top CEC Planar Array receiver that had become detached. I glued in the two radar supports and scanners[33], taking care to get them level.

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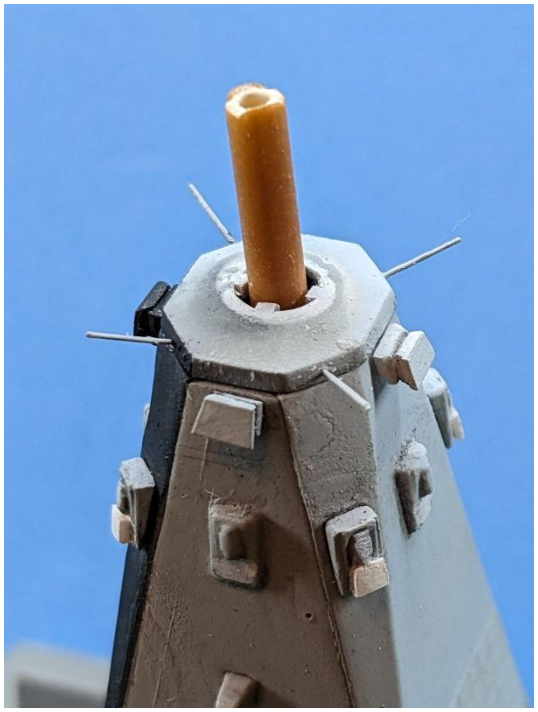
I opened up the hole in the foremast cap part until the four stub arms will provide support to the tube that will run through it (the insulation stripped from an electrical wire), whilst allowing it to turn freely. Painted the three black faces of the cap part, scraping off any overspill onto the top faces with knife – I am discovering that this is a better technique than trying to wash off any overspill. I then glued the cap in place. Filling the gaps is going to be a nightmare, especially working around the delicate lightning conductors.

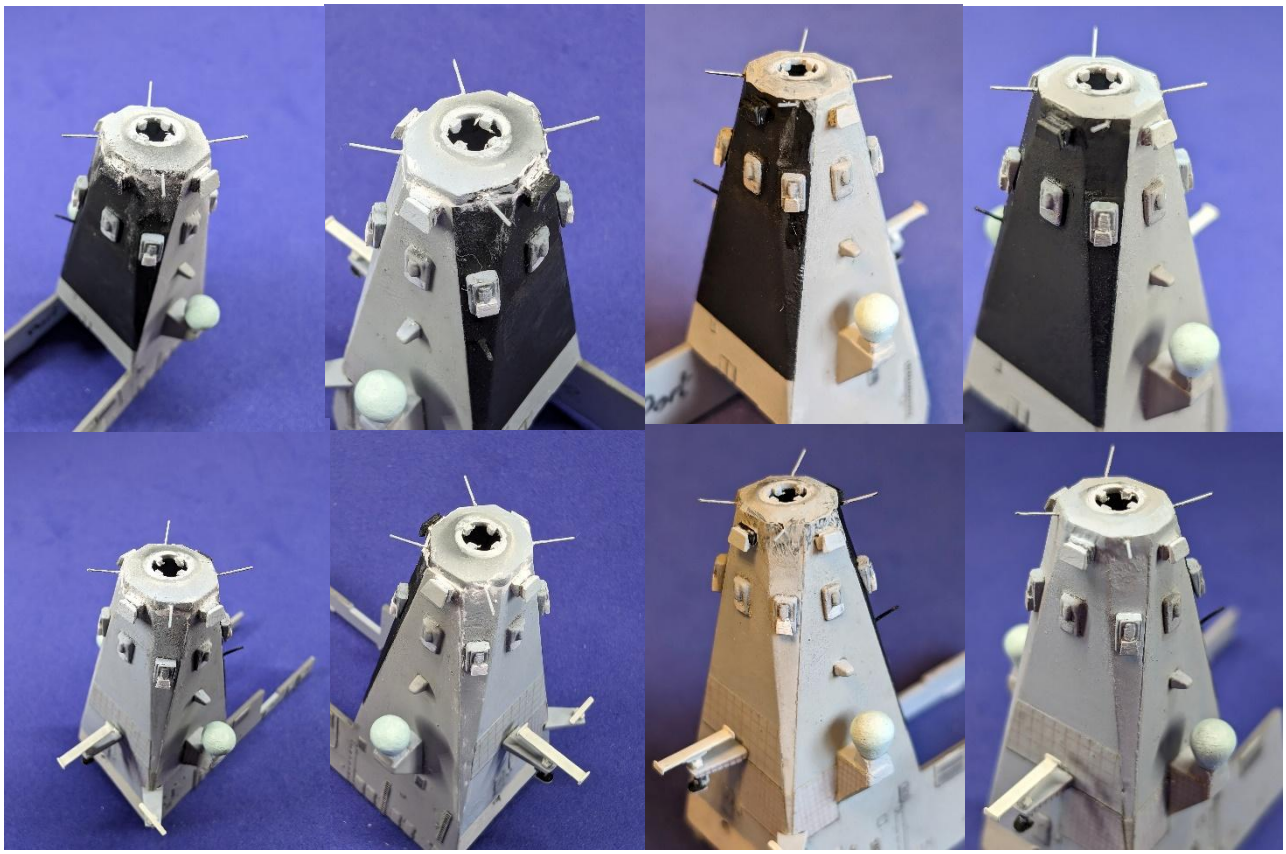


[33] Raytheon Type 1048 search radar and smaller Type 1047 navigation radar.

I filled the gaps all round with Perfect Plastic Putty, applying and smoothing with a sculpting tool and then a damp cotton bud when semi-dry. I did two passes of this process to make sure all the gaps and gradients were filled. I also filled one gap along the edge of the mast. Of course most of the mast will now need repainting – again!

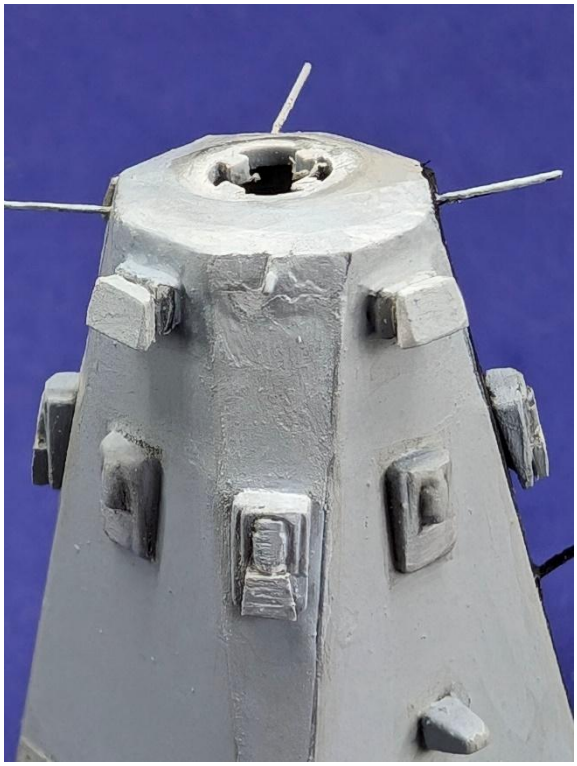
I sanded down the filler, ending with 800 grit sandpaper and making two passes all round. I brush-painted black Vallejo primer over the results, so that I could see any defects, and to seal the filler. Apart from a distinct bulge on one side, I think I am pretty close to a good result. It is a miracle that I have not (yet) damaged the delicate lightning conductors. I added some Mr Aqueous Surfacer 1000 over some suspected holes and depressions, sanded back again, and recoated with black primer.

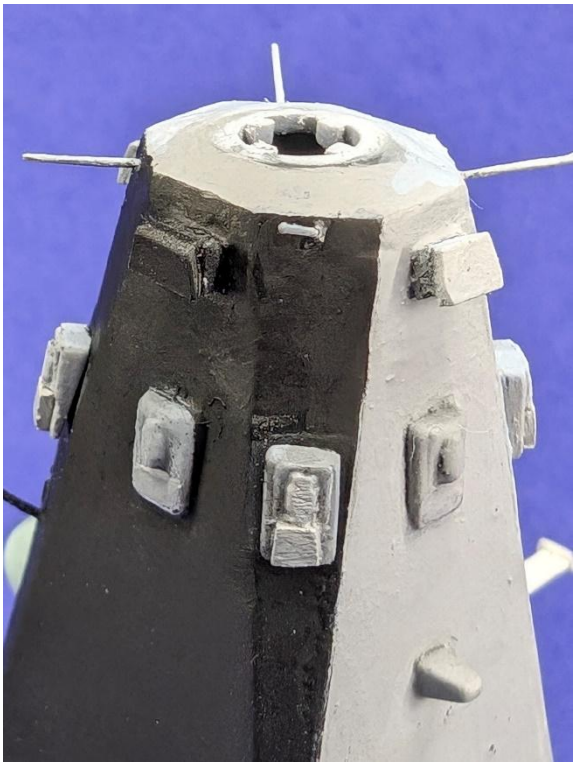
At the same time, I covered the difficult area on the ship's starboard upper side where a ghost crack keeps reappearing, below the aft mast, and some



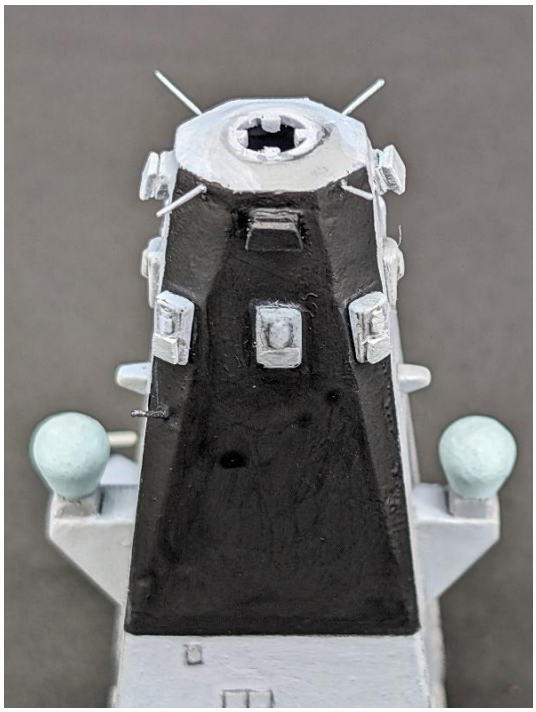
Progression filling and repainting the foretop, left to right. Still not finished when the last photo was taken.

other holes in paintwork on the same side. After sanding, they looked good, but there were traces of the ghost crack reappearing (I might have sanded too much off) so I did a second application there. I sanded again, down to 300 grit. Of course, it now needs yet another respray, but looks good – although shiny streaks are visible again where the sandpaper has taken off the top coat, which might need priming before repainting.





I started the repaint by covering the black primer with a coat of Sky Grey, by brush, then brush-painted all the other surfaces of the foremast – by the time I had finished, I had repainted most of the foremast, though working around the previously pinwashed details. I think the overall effect is an improvement to the finish, but at a cost of more coats of paint. I have become a fan of flow improver – I found that adding a drop to the brush and stirring it into the paint made it much easier to cover the surface without brush marks. I am also suspecting that my wet palette adds too much water to the paint, which quickly becomes very thin, when using Model Air. Even with flow improver, I can't get flat black surface using Vallejo Model Colour, so the black will probably have to be airbrushed.



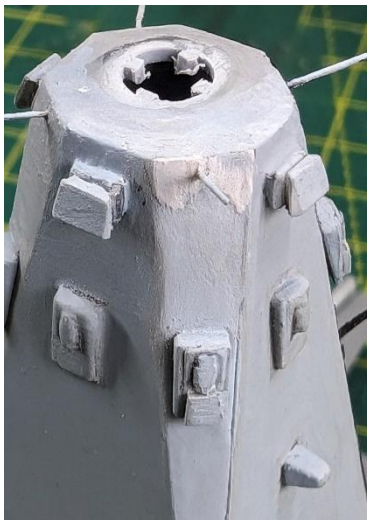
I thought I had finished the top of the foremast, but the bulge I noticed earlier around the forward-port lightning conductor kept reappearing after the paint coat. I tried several times to sand or file it down, thinking it was gone, but the paint showed it up again.

Eventually I decided the surface was too uneven and added more Perfect Plastic Putty to fill pits and build back the corner slightly. With two applications and more sanding, and another coat or two of paint, I got to a reasonable result.

I decided to have a final go at getting a flat black surface on the aft side of the mast by brush painting. I sanded the larger, accessible areas with a 3000-grit sanding stick, then used black Model Air thinned with distilled water, a drop of flow improver and my best No 1 brush. The result was better than before, but there are still shinier areas. Airbrushing black will be a pain, because of all the masking, but perhaps matt varnish will do the job.

I foolishly tried again with neat Model Air, and that was worse, with a shine right across the recoated area. Sanded and repainted again with Model Colour.

The flag gaffs on the ends of the dome sponsons were made with pre-primed 0.5mm brass rod. I drilled holes and fitted the rod, with the protruding length

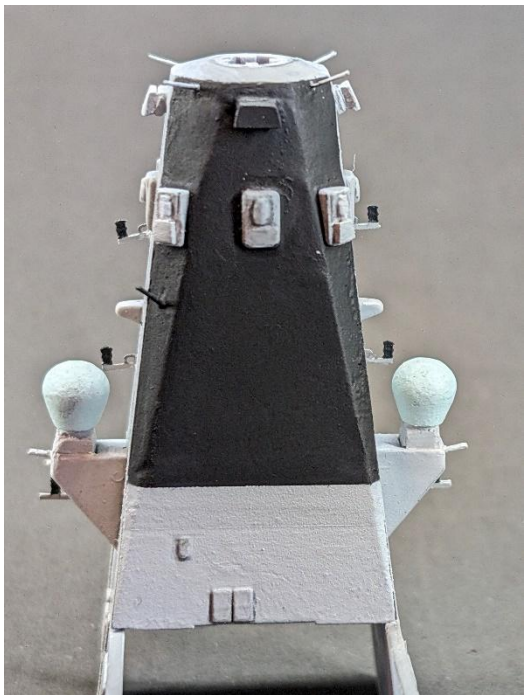


decided by eye, filing the ends square with a diamond file. As usual I had problems: the drill split the sponson (turns out I was drilling on a join line), then I had difficulties fitting the rod in the holes, largely due to picking up a length of 0.8mm rod instead of the 0.5mm I was using! The ends and gaffs were (re-)painted, after cracks were filled.

More happily, I had no trouble at all fixing the six delicate ECM antennas either side of the mast, using Mig Ultra Glue. It had the right amount of tack for the parts to just stay where they were put. The positions were marked with a fine pen, referring to photographs and the pin holes I made when I removed the kit mouldings. From photos I established that the antennas are evenly spaced vertically, with the kit measurement coming out at 13.5mm centres.

But then I looked again at my reference pictures, and decided that the top antennas needed to be further forward, as they should be very close to the angle of the mast. One was also a bit high. So, I went back and re-positioned the top four antennas! The glue bond was surprisingly strong even after 10 minutes, but once dry, it is still flexible: the parts re glued only on the edge of the PE, and can easily be moved back and forth. I tried to add a tiny amount more glue into the rear angle of each, with wire and knife blade.

In preparation for fitting the yardarms, I looked at reference pictures for exact position. I was horrified to realise that I have put the divide between black and grey on the aft side of the mast far too low – 3 or 4mm. Nothing for it than to mask up and airbrush the grey area (in -3 Pale Blue Grey). I first brush painted black over the edge of the tape, to reduce the chance of grey leaching under the tape.



The resprayed back of the foremast. The original line is visible (might sand that out). ECM antenna loose.

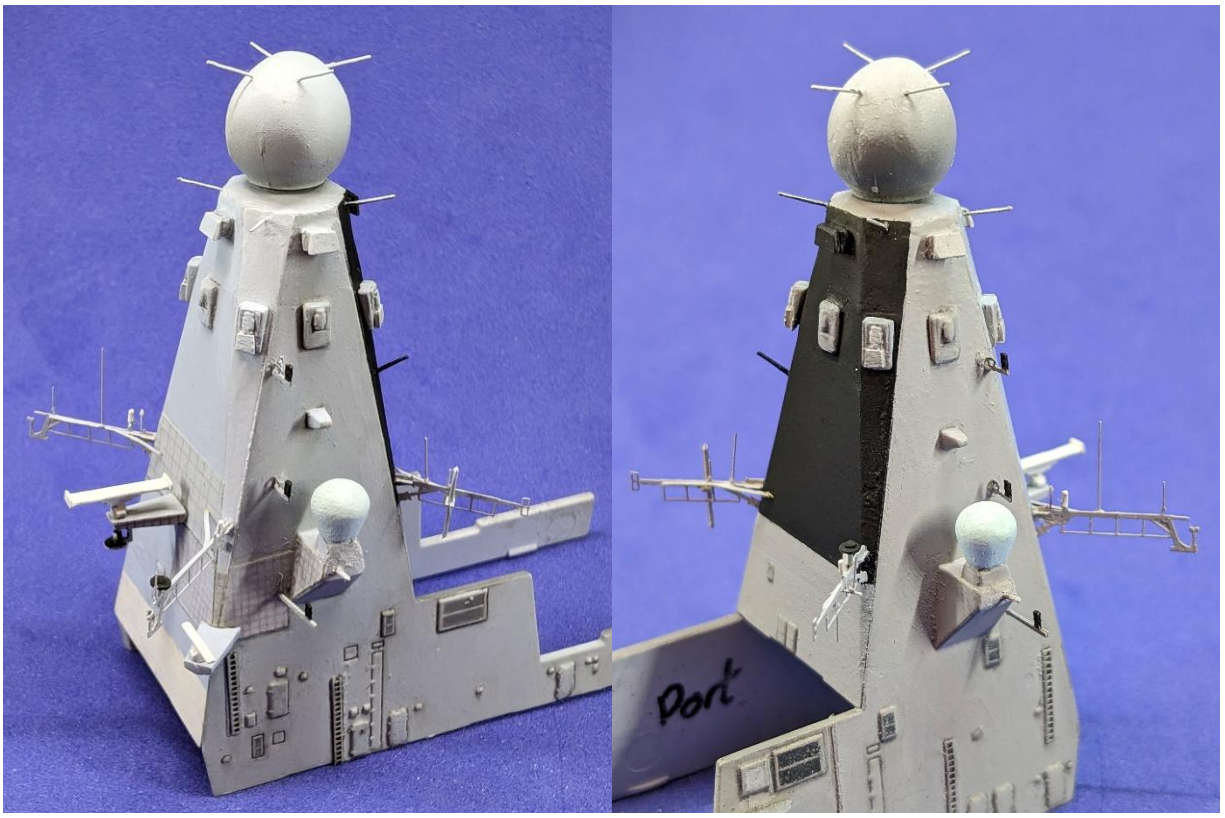
Will I never learn? I only used 6mm masking tape, and I got overspray on the black surface above the tape. Oh well, I had intended to re-airbrush the black anyway, because the brush painting was not fully matt. I masked up further (and better) including covering the sensors with Silly Putty, and sprayed neat Model Air black. That worked nicely.

Inevitably, with all the extra handling, I disturbed one of the ECM antennas, which hung backwards. I tried to refix it with more glue.

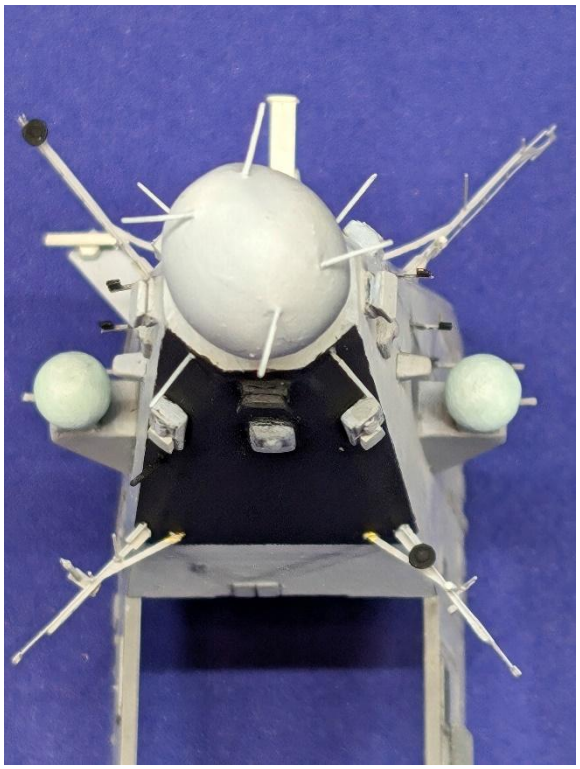
Test-fitting the yardarms, I realised that the fore-and-aft braces are far too long: the arms cannot possibly go on at 45° with the braces as they are. They cannot be bent out, as they are horizontal metal. The ideal would be to cut slots in the mast, but not at this stage – the holes would need filling and painting. I will need to cut the braces shorter. That's tricky because there is no easy way to measure, and cutting too short would be disastrous. Glueing the yardarms without holes is also going to be hard, due to lack of bonding surface. On the real ship, the ends meeting the mast surface are large blocks, but I see no easy way to fill in the PE crosses – unless I use epoxy, perhaps? That would then need painting.

I decided to stick with Mig Ultra Glue. I do like the way things stay here you put them with this glue. I had some trouble getting my snips to cut the brass braces cleanly, and one of the delicate arms got two pieces knocked off, but on the whole the fixing of the yardarms went well. Apart from some minor corrections (I think there is a gap between the lower support and the wall on one of them) that's the foremast complete!

Inspecting the yardarms once the glue had cured, the starboard-aft arm was hanging down at an angle. The lower support was indeed too short to hold it horizontal. I cut the tiniest sliver of styrene sheet, painted it Sky Grey and



inserted it, with glue on each side, into the gap: the glue holding the arm gave enough flex to lift the arm to create the space to insert it. This worked well.



I noticed that the side braces of the two forward yardarms had not adhered to the forward surface of the mast. I wanted to fix that for extra strength, as the yardarms are very vulnerable to damage, and very easy to catch with each passing movement of the hand. I applied a tiny quantity of Mig Ultra Glue using a fine brush (actually a nail painting brush), which seemed to work well. I used the same technique to try

to strengthen the “bow” antenna, which came off during the original fixing and was now sagging – eventually I added a dop of superglue to the joint, as Ultra Glue seems to remain flexible indefinitely.

The glue washed off the brush easily with water.

I went to use the same technique to fix down the fine wires I used as the supports for the GPMG shields on the flight deck, which were left floating in the air. But I found it easier just to shorten the wires with snips and bend them roughly into place. If there is a tiny gap between support and deck, it will hardly be noticeable.

I mixed some Vallejo primer (white and black) to vaguely the right shades of grey and touched up some spots on the yardarms where paint had come off, showing shiny brass spots. I again used the very fine nail painting brush, which I like a lot.

That’s the foremast finished. In parallel with this work, I continued with the motorisation.

I used some acetone on a cotton bud to remove superglue residues around some of the weather deck fittings. I touched up the damaged areas with paint. And it dried lighter than the existing paint again!

More motorisation

With a cutting disc in the Dremel, I cut out some more of the underside below the flight deck, to get the batteries in. I found that an alternative battery case, without the 9V battery-type push-fit connection to the box, will just fit in the space without removing the cross-brace, so I will probably change the battery box, requiring re-soldering[34].

At some point in all the handling for the motorisation, I have knocked off and lost one the miniguns, which will have to be remade.

[34] Not in fact done, as the batteries can go in the base, not inside the hull.

I assembled everything so far as I am able, to simulate the friction in the finished model, including the foremast in place and the wire insulation tubes in place on the top of the drive shafts. I removed the temporary jumper wire[35] so I have two 27Ω resistors in circuit. I took a video of it running, and was delighted to find that the foremast radar did 20 revolutions in 10 seconds – exactly the correct 30rpm!

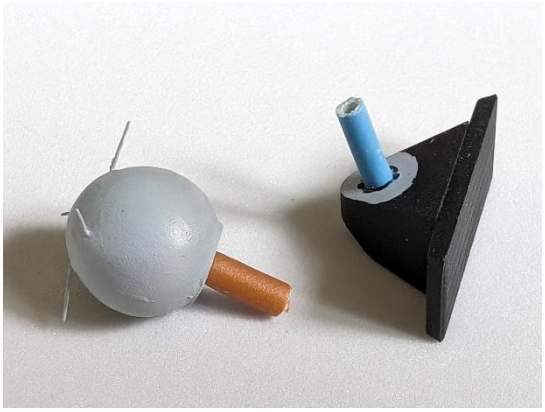
I have been pondering for a long time exactly how to mount the radar scanners. I have finally decided that in both cases, I will fix the insulation tube directly to the scanner, and push-fit the tube onto the shaft. The aft (search) radar is more difficult, because the shaft is at a slight angle and it might be hard to get the scanner to sit and rotate level. I am hoping the flexibility of the tube will act as a constant-velocity joint to straighten the angle. I will shorten the aft shaft by 1.6cm. To seat the scanner as square as possible to the mast, I will slightly enlarge the mast hole and fit a sleeve of 4.7mm styrene tube to the bottom of the scanner, so it rotates snuggly in the hole.

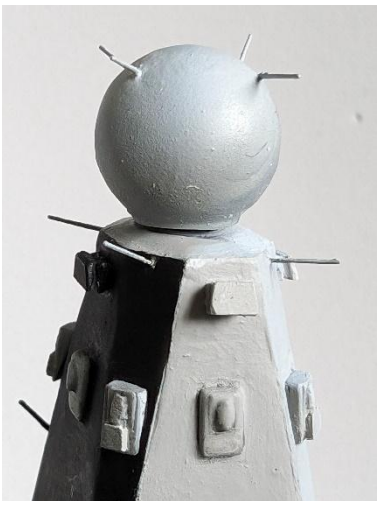
Fitting the aft scanner to the shaft may be tricky, as it has a tendency to spring forward of the hole, but if necessary, I will be able to loosen the motor base and manipulate the shaft from below.

In both cases the tube (wire insulation) should be longer in this configuration than the pieces I have been using, so I cut longer pieces. The aft tube (2.6mm external diameter) needed drilling out with a 1.5mm drill to fit the shaft. I enlarged the hole in the Sampson scanner to take the 3.3mm tube, using successively larger drill bits rotated by hand. Despite great care, the dome

[35] See p124.

started to split along the seam and my grip on it damaged some paint. Applied some Tamiya Extra Thin to fuse the split.





First fitting of the Sampson dome fully on the shaft.

I am delighted to find that with both scanners, the soft tube fits snuggly in the hole, and will provide the necessary grip without needing to glue it in. That makes it possible to remove the scanners if needed in future, reducing my worries about the whole mechanism being permanently fixed. I straightened the lightning conductors.

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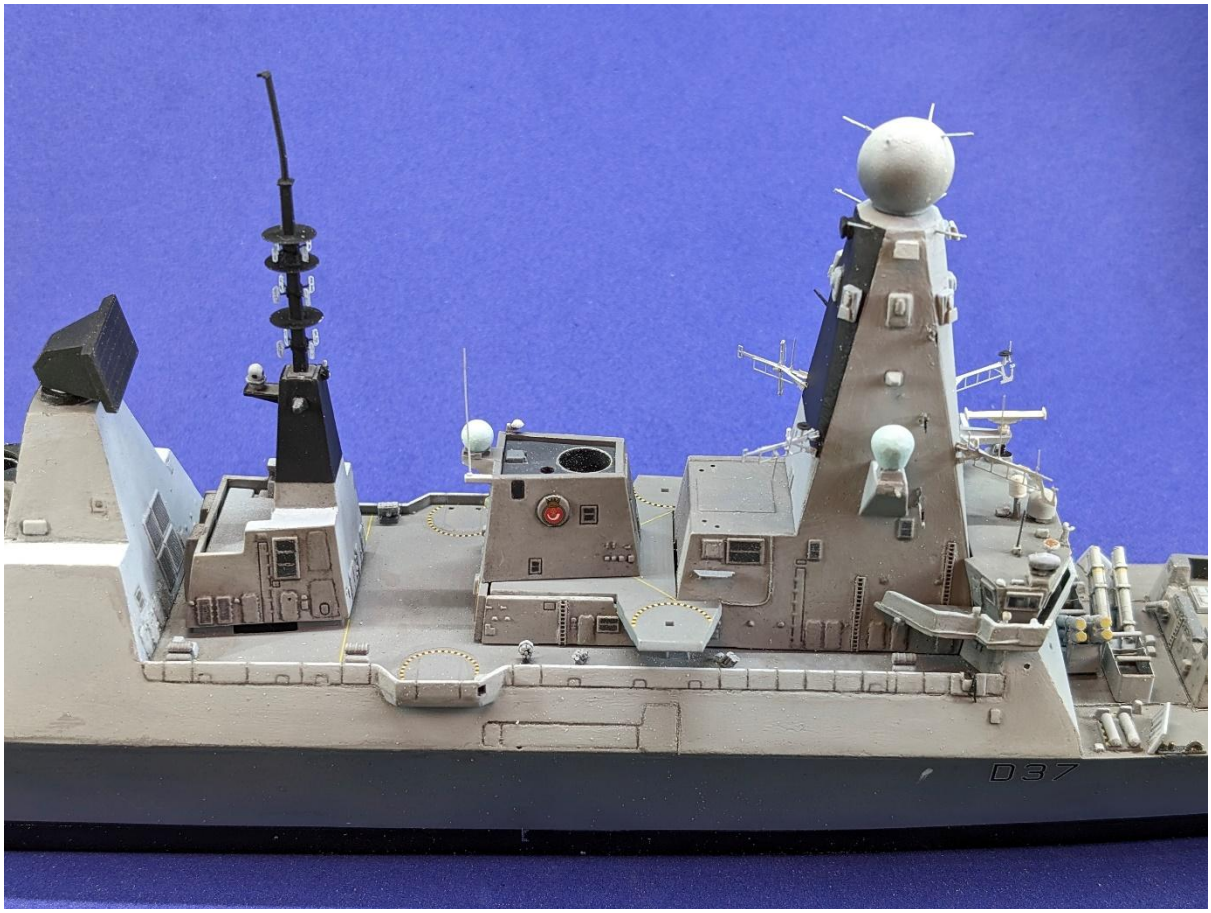
I removed the motor base for what I hope is close to being the last time. I cut the aft shaft down by 1.6cm, as previously measured. The hole in the top of the aft mast was enlarged slightly using a half-round file, to accommodate 4.7mm styrene tubing with the ability to turn freely; I then glued a short length of the tube to the bottom of the search radar scanner, so it achieves a snug fit, whilst free to rotate. I will lubricate with silicone.

Fixing the upperworks (and more 01 Deck fittings)

I dry-fitted the foremast before glueing and realised I had been over-complacent about checking the fit. I had not recently pushed it all the way down, and I found that even with strong pressure, it would leave a 1mm gap at the bottom. Part of the problem was the presence of the small bulkhead pieces at the forward end of 01 Deck, so I severely sanded back the edges of the foremast that met these parts. That helped, but there was still a 0.5mm gap. Having tried to work out what was binding, I concluded that it was a general tightness, especially on the corners of the deck former. The foremast joint in the front corner started to split if forced on. Yet again, the Airfix designer seems not to have taken account of the thickness of the plastic. I used my new battery-powered rotary tool with a sanding drum to sand back the deck

former, especially on the outer angles. After much work and many test fits, I got the mast into position.

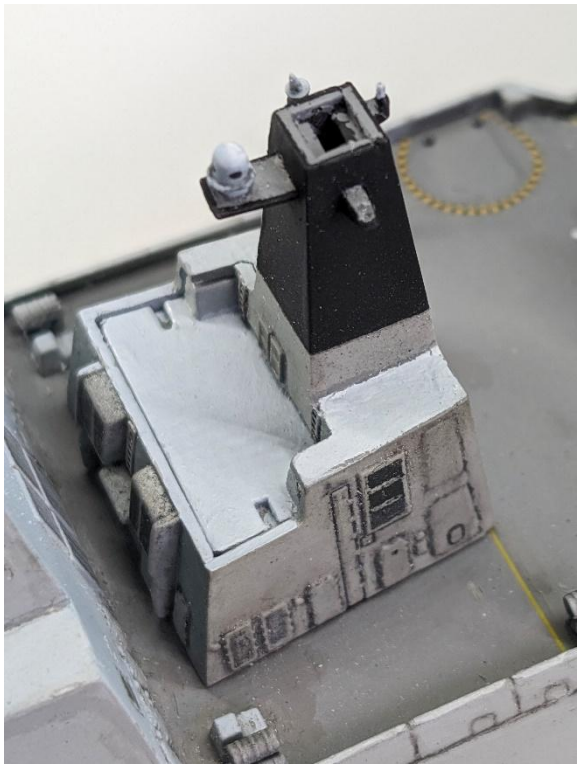
I thought I should check the fit of the other modules before gluing on the delicate foremast, in case further violent surgery was needed. Sure enough, the polemast (mainmast) unit was also too tight to go all the way on.



Dry fitting all the modules. The polemast unit does not fit properly (plus the plastic top is bent).

Having removed all the dry-fitted modules, I set about the same process to make the mainmast unit fit, sanding down the former with the power tool. In this case I found the most effective way was to sand and file the inside of the module; there were still traces of the locating tabs, and with a square diamond file I was able to get well into the corners. After a lot of effort, the part fitted.

I noticed that I had failed to paint the top of the deck former where it forms the deck just abaft the polemast. Surprisingly, photos show this to be hull colour, not deck grey.[36] I used Wolf Grey (+1) for this – I started with +2 but felt it looked too bright. The top edges of the polemast unit were painted to match, and the shaded verticals Pale Blue Grey.



I chamfered the starboard aft edge of the foremast module (near the CIWS position) and the corresponding edge of the uptake module, as the dry fit showed that they interfered with each other. I overdid this, and created a gap!

With all this handling, I noticed that I had knocked off the second minigun, though I found it on the cutting mat. Though generally, I should be happy at how well the model has stood up to being flung around and attacked with a power tool.

Small antenna (bottom left) and side gaff (top right) added.

I added two details on the aft face of the funnel (main uptake) that I observed earlier[37]: a fine antenna, made from 11mm of 0.1mm nickel rod, and the side gaff on the main gaff supporting the larger antenna, made from scrap fine wire. Both were fixed with a dab of Ultra Glue. The antenna can be left natural metal. I probably will not attempt to add the wire that runs from the boxes to

[36] On HMS Duncan: HMS Daring seems to have this area in deck grey.

[37] See page 38.

the main antenna via the end of the gaff. The gaff really should be smaller, and I probably should not have modelled it.

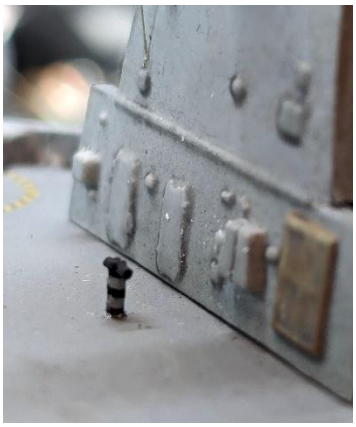
I spent a lot of time looking at photos, and especially a really useful tourist visit video[38], to identify any 01 Deck fittings I have missed. Ones I have decided I need are:

- Auxiliary compass posts between the CIWS and the torpedo decoy launcher
- Emergency conning post on the cross-deck behind the funnel
- Four RAS capstan control positions (obelisk-shaped objects, two between the aft mast bulkhead and the life rafts, two just forward of the SCG platforms (there is similar one on the foredeck near the starboard decoy tubes, but it is represented in the kit deck part). These are the same height as the gunwales, 2.5mm.

I think I am going to ignore the following, which are hinted at by moulded details on the kit bulkhead faces:

- Three posts in front of the mainmast, either side of the central door
- Three posts just in front of the aft mast on the port side

I made the RAS capstan control columns by cutting 2.5mm lengths of 1x1mm square styrene rod and sanding them to shape, first together, held down with double-sided tape, but then individually, gripped in haemostats. They were primed and painted Pale Blue Grey, with lighter faces Wolf Grey, and glued in place.



I made the two compass posts from brass rod and primed them.

I made the ancillary steering point that stands in the cross-deck, just behind the funnel, with some scrap brass rod, to which I attached two tiny scraps of plastic rod to form the “ears”. It was painted in stripes of NATO Black and Pale Blue Grey, and glued in place.

[38] I wish I had seen this video (an open day tour of Type 45) earlier, as it is an invaluable reference source for details: https://youtu.be/cn7OpulGTn8?si=7RlA2EJbLTmo8pMa. I took lots of screenshots.

For the two compass posts, I wrapped a loop of 0.25mm wire around the top of each post as crude representation of the handle, tightened and the ends cut off, fixed with Ultra Glue. Not a great result, but I hope better than plain shaft.

I observed in the reference sources that the three supports for the SCG platforms are not square-sectioned, as I previously thought, but rectangular, about 2:1, thin edge facing outward. I glued together two 5cm lengths of 0.5mm square styrene rod to make these, primed them and painted Pale Blue Grey. I estimated the length required for each at 0.7mm; I then measured the kit parts and was gratified to find they are 0.68mm long.

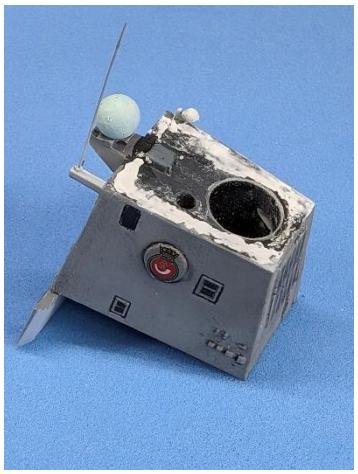
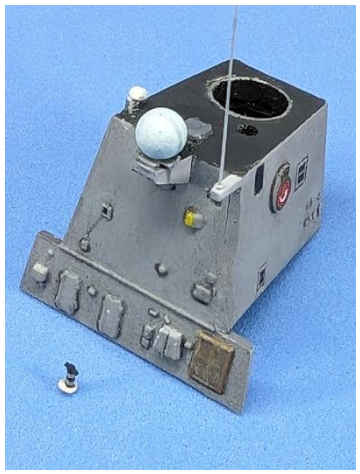
I glued back on missing ladder on the back of the mainmast module, and touched up the paint.

In discussion with another modeller on Facebook[39], I discovered that he had completely cut off the formers from the main deck part, making it much easier to fit the upperworks modules. He fixed the tops of the formers into the modules where they formed the decks, allowing the fit to be adjusted and gaps filled before fixing the modules to the deck. It was too late for me to do that for most of the upperworks modules, but the thick wall around the outside of the funnel had been bothering me. I consulted my reference pictures and convinced myself that the wall should not be there. The deck should fit flush – if there is a small upstand, it is much narrower than the thickness of the plastic.

So I hacked off the funnel former with the Dremel cutting wheel. My first attempt failed – I tried to cut just below the top, not realising that the area containing the uptake is solid plastic. The cutting wheel broke through into the uptake tube, which needed repair with filler. I cut the module off lower down.

It took quite lot of sanding to get the roof to slide far enough up to fit flush. I again resorted to the power tool on areas that won't be visible. Once in and glued, the roof was filled and sanded. It took a lot of rounds of filling, sanding and painting to get an acceptable result.

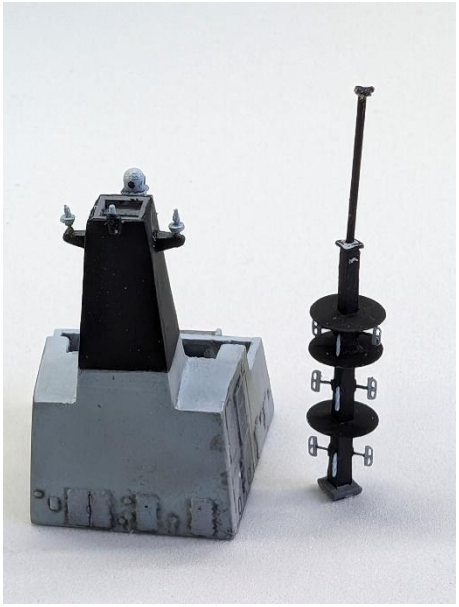
[39] See his rival build blog at https://forums.kitmaker.net/t/1-350-airfix-type-45-hms-dragon-or-is-it-dauntless/227/1

Time to tackle the missing “pagoda” conical UHF antenna from the mainmast that I lost earlier, and to replace the bent plastic topmast. Luckily, I had kept spares, both of the brass-turned spikes and the plastic rings I made earlier. Although these were rejects, and by definition less good than the originals, I decided to use them, saving a lot of time. I primed, painted and glued in place with VMS Flexy Slow CA. I did the same with the auxiliary compass posts on 01 Deck, with a slight hiatus when one pinged out of the tweezers. It took a half hour to find.

The bent section of topmast is 1mm in diameter and 1.55cm long, excluding the cap, which I will re-use. I don’t seem to have 1mm brass rod, but I do have 1mm tube, which would do; but holding them both against a scaled photo, I decided 0.8mm rod (which I had) would be a slightly better match. I primed and painted a length of rod. The plastic part was cut flush with the square plinth and under the cap. I drilled the mast with a 0.9mm DSPIAE drill and fixed the mast with VMS Flexy Slow CA. I thought the topmast was not quite vertical,

so I bent it very slightly, using two pairs of pliers to grip it and the mast close to the base. I touched up the paintwork in black.



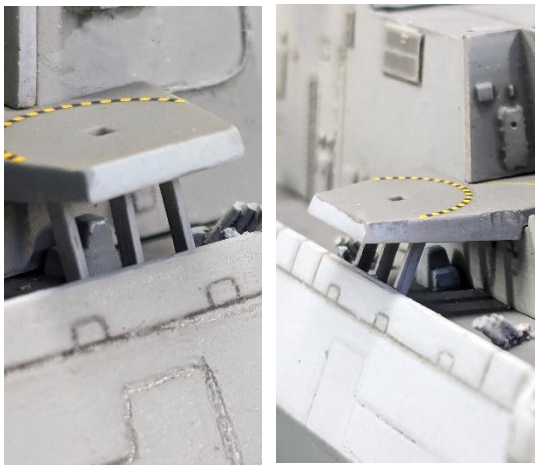
The replacement pagoda antenna (starboard side) and the new brass topmast, before bending straight and touching up paint.

While I could still handle the model without knocking bits off, I went to repair the railing at the back of the hangar. This was very painful, due to the difficult access. I used a head torch, pulled down to my nose, and a pair of long, fine tweezers. It took many attempts and much swearing to get the railing even roughly in place. Dropping the part and wielding the tweezers spread spots of CA glue around and did some damage to other features, which had to be repaired. The idea of installing lighting was to show off the hangar interior, but the damage to the back wall does not pass inspection; fortunately it will barely be visible, even with the light on. I also dropped the model on the table twice, proving the wisdom of doing this job before fixing on the foremast, with its delicate antennas.

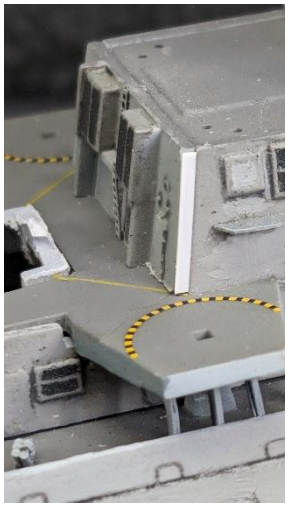
That's all the preparations complete; time to fix the upperworks, which will require several more filling and sanding tasks, where the modules meet the tops of the deck formers. I don't intend to fill the tiny gaps around the bottom of the modules, which are now a good fit.

After one last dry fit, I glued the foremast module in place, spreading Ultra Glue over the deck former a with cocktail stick. The module went on easily; I used a miniature clamp on one side to make sure the long side piece stayed tight to the surface. This feels like a momentous step in this build!

There are some gaps to fill, but first I should complete the foremast unit by adding the small-calibre gun platform and the aft bulkhead. I took the 0.5x1mm piece that I made and painted earlier and cut it into six 7mm lengths, cutting at a slight angle. Those were glued against the rail to make the support struts below the gun platforms, angled inboard. The groove in the kit deck was a guide to width, but I checked the appearance against photos before gluing and decided that the groove was slightly too long at one end. I positioned the middle strut by eye, checked that they all sloped consistently and dry fitted the platform part to make sure it all fitted. The Ultra Glue was left to cure. They look perfect. I primed and painted some 0.25mm wire to make the pipes that appear to run down the foremost struts. With considerable difficulty and several attempts, I glued them in place. It really was not worth it: these pipes are barely visible.



Supporting struts for the SCG platforms. Pipe not yet installed.

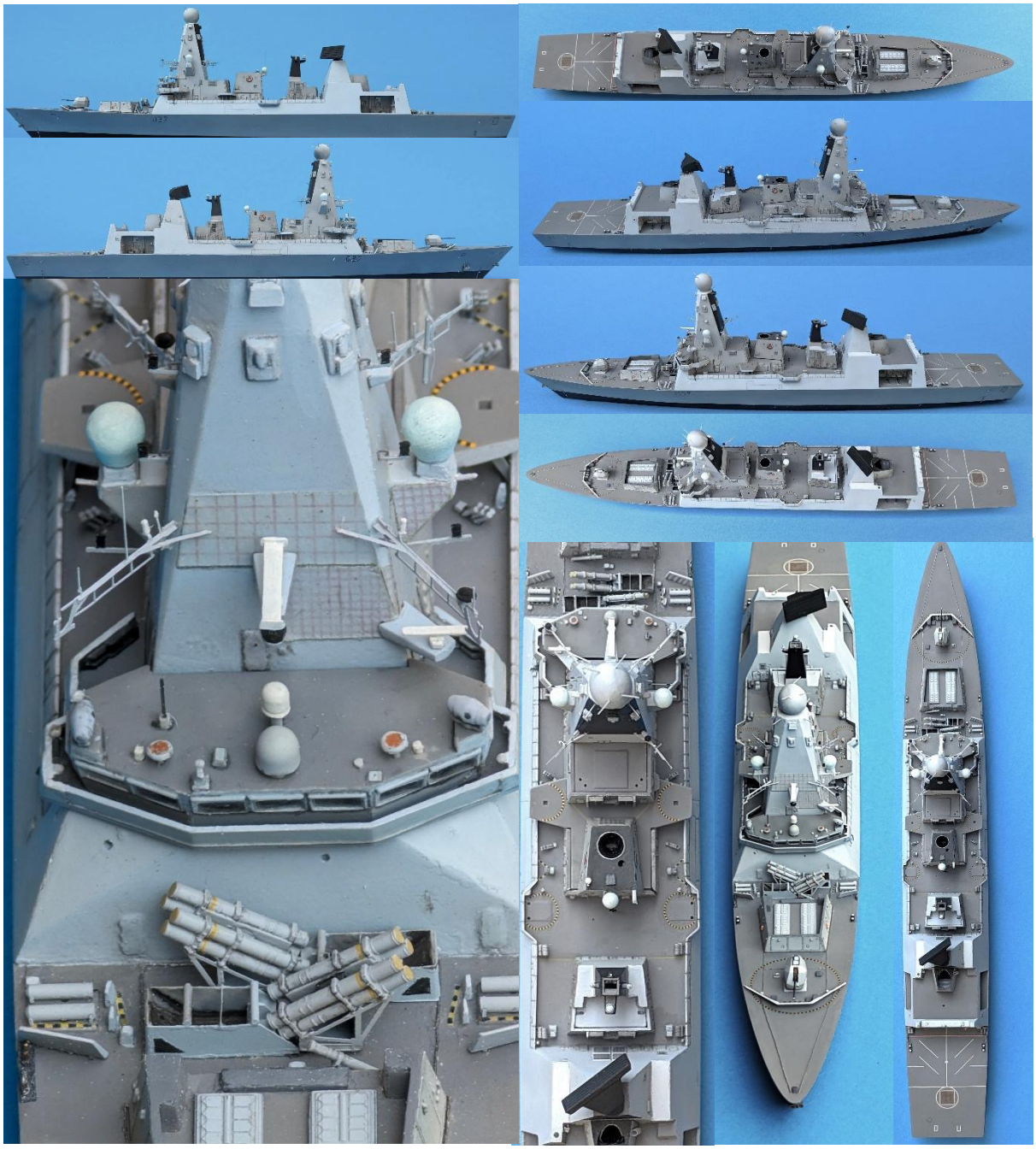


The aft bulkhead part needed reducing in height by about 0.5mm. I improved that slightly by using a knife to slice off the protruding tops of the foremast side parts, where they were supporting the platform part, then sanded some

plastic off the bottom of the bulkhead. I glued the platform part and bulkhead in place and left the Ultra Glue to cure.

I stuck two life rings to the inside of the bulwarks, just abaft the SCG platforms.

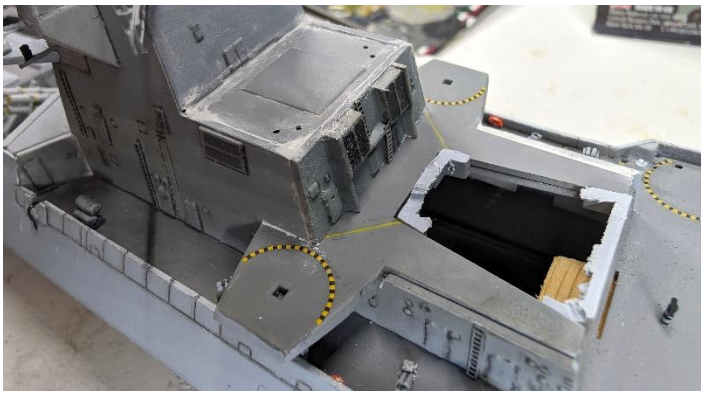
I checked the fit of the bridge. It needed a tiny amount of sanding and, more importantly. Removal of the locating tabs – as usual in this kit! I tested the lamp ready for final fitting, and to check light leakage around the edges, - not much, but I must seal the edge of the bridge roof where it meets the mast face.



Interim photo gallery to celebrate fixing the foremast. Forgot to put on the polemast! The rest dry fitted. Wonky bridge.

I began the task of filling the gaps around the foremast. I cut and inserted a fillet of plastic where the aft bulkhead part was a half-millimetre too narrow, and added generous quantities of filler to gaps. I mixed Sky Grey paint into the filler, which looked OK on the palette, but actually still looked white in place. I removed excess filler with wet cotton buds and, for finer details, micro applicator brushes (for eyelashes).

I painted the filler in the forward port corner of O1 Deck. That enabled me to fix on the bridge above it. I spread a bead of Perfect Plastic Putty, coloured with Medium Sea Grey (deck colour) and thinned with water, along the bottom edge of the bridge roof, hoping that it would seal against the mast and block light leakage. The bridge, built and detailed all those months ago, was then glued in position. Another momentous step!



After first application of filler

I did another round of filling of the gaps around the aft of the foremast, using the same filler and paint mix. It seemed to go well, and I will be able to test it by painting soon. Cleanup seems to be quite easy with water, though wasteful of cotton buds. Working around the yardarms is hard, though, and I keep catching and damaging them. I broke one antenna off twice, so set it aside for later re-fixing. I only lost it later on.

The deck behind the foremast is problematic because of the slight difference of levels between deck and walls. I am trying to disguise this as best I can with layers of filler, but there will be a distinct dip in it. I wish I had removed the deck part and fixed it during the foremast assembly.

After at least three applications of filler I painted over it with grey primer to check the surface. The blending of the sides was good but the surface was still uneven. I added a small amount of Perfect Plastic Putty and tried to smooth it in with wet tools finger, before further sanding.

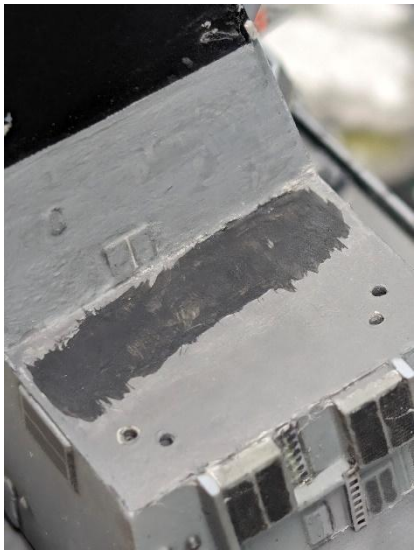
The surface was still unsatisfactory. I tried several more rounds of sanding and priming, including thick Vallejo primer which I hoped would pool and fill the depressions, but the surface was still visibly uneven, as well as the bowl created by filling from the edges still being detectable. Only at this point did it occur to me that the correct thing to do was to fill this bowl entirely with filler, smooth it as best I can and then sand it completely flat. There will be much better access for sanding if I can sand straight across. I can then re-create the surface detail with simple 1.1cm square of styrene sheet. I had already decided to re-open the locating holes for the equipment boxes by drilling up from the underside.

I cut a new 1.1cm square of 0.5mm styrene sheet, using the guillotine and primed it.

I let the primer cure, then added more putty, thinned with water, and skimmed it in with a wet straight-edged tool. The square feature was almost entirely covered by the filler.

Disappointment: the deck surface is still rough

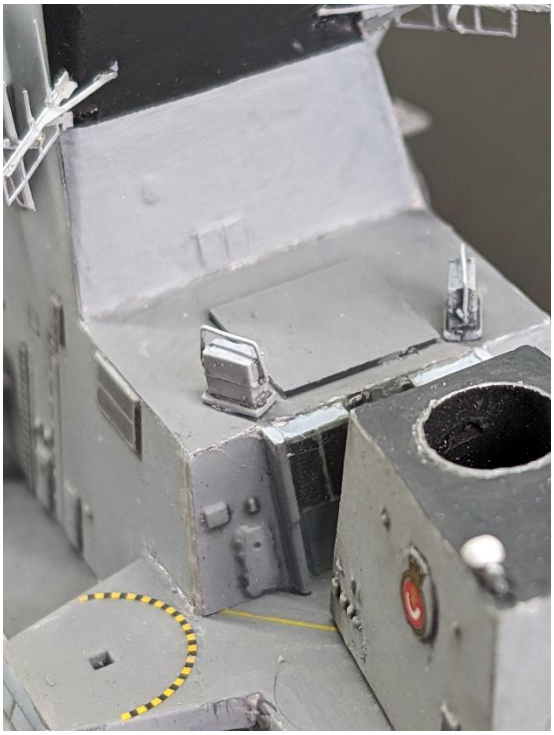
Once sanded with 320 to 1800 grit sanding sticks, it looked and felt good; imaging my disappointment, dear reader, when I brushed on a coat of primer and found it still looked rough, though better than before. Another coat of dilute filler was added. After sanding, I was convinced it was much better, looking and feeling smooth, but again a coat of primer showed up an irregular surface. I tried changing tactics by adding a thick coat of Mr Aqueous Surfacer 1000. That sanded back to a smooth-looking surface, but there were still a few visible small pits and scratches. I put on thin coat of Mr Surfacer where needed, being careful to fill the holes. Once dry, that produced a surface that looks ready for paint. I finished by running a small amount of Perfect Plastic Putty along the join with the bulkhead, smoothed in with a damp, pointed carving tool. In the course of all this I knocked off one of the yardarms.



I painted the deck and bulkhead by brush. Still not a perfect flat surface, but it will do. I again had trouble getting an even paint finish on the bulkhead. I re-drilled the locating holes from the underside with a 1mm drill. I still was not satisfied with the deck surface near the bulkhead, so I went another round with Perfect Plastic Putty, primer and paint.

I fixed on the pre-painted raised square, which should be close to the aft edge of the deck. I was about to fix the “picnic basket” equipment, when I checked my sources and realised that Airfix has them too far forward – the corners should be almost touching the aft edge of the deck. They should also be at a

lesser angle. Aaaargh! That means re-filling the holes I've just drilled, and yes, more sanding and re-painting.



Once done, I glued the "picnic basket" equipment in place and glued back the yardarm I knocked off. In trying to refix one of the tiny antennas on it, it pinged out of the tweezers and was lost.

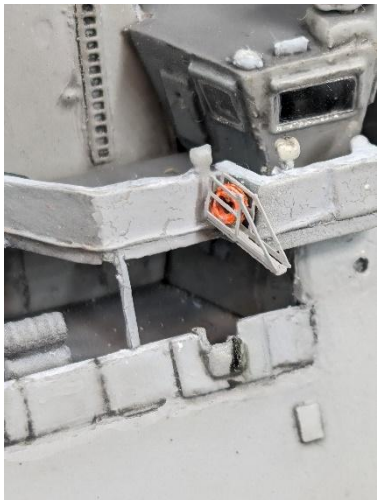
This deck has been tedious obstacle to making progress with the build, delaying me several days. I need to re-pinwash the details on the bulkhead.

Whilst waiting for repeated rounds of filler to dry, I started on the three "spike" antennas – actually 10m HF whip antennas. I did not expect to be able to use the kit antennas, but I tried sanding one to shape using folded 320 grit sandpaper, sanding up and down whilst rotating the part in my fingers. I was pleasantly surprised by the result, which produced a distinct spike, but it still looks too chunky. In any event, the kit antennas are a little too short: about 26mm long. 10m is 28.6mm in scale, and observations show that the forward pair seem to reach just above the top of the search radar. The aft one ends lower, just above the bottom of the search radar face, but is probably the same length. All are very fine spikes tapering evenly along the length to sharp point. I estimate diameter at the base at around 0.5mm in scale.

Before and after sanding down spikes

The same helpful Facebook contributor who suggested cutting of the tops of the deck formers pointed me to the brass masts and yardarms for 1/700 ships

produced by Master Model, and I ordered some.[40] They are gorgeous – I love precise brass parts – and perfect for the job. Taking measurements for pictures with a protractor suggests the aftward rake of the antennas is about 15° (fore and aft antennas are parallel in the fore-aft vertical plane), and the outward splay of the forward pair about the same (apparent angle). Using schoolboy trigonometry I calculate that the true angle of dip of the forward pair is 18°.



I glued the best two of the remaining life rings into the two bridge ejector frames and glued them onto the bridge wings. I am not entirely happy with the angle they sit at. I cut two lengths of 0.3mm styrene sheet, aiming for 0.5mm wide, to make the bridge wing braces, cut them to length, primed and painted them. Using a new knife blade, I cut a sliver off the back so the surface meeting the bridge wing was thin, then glued in place.

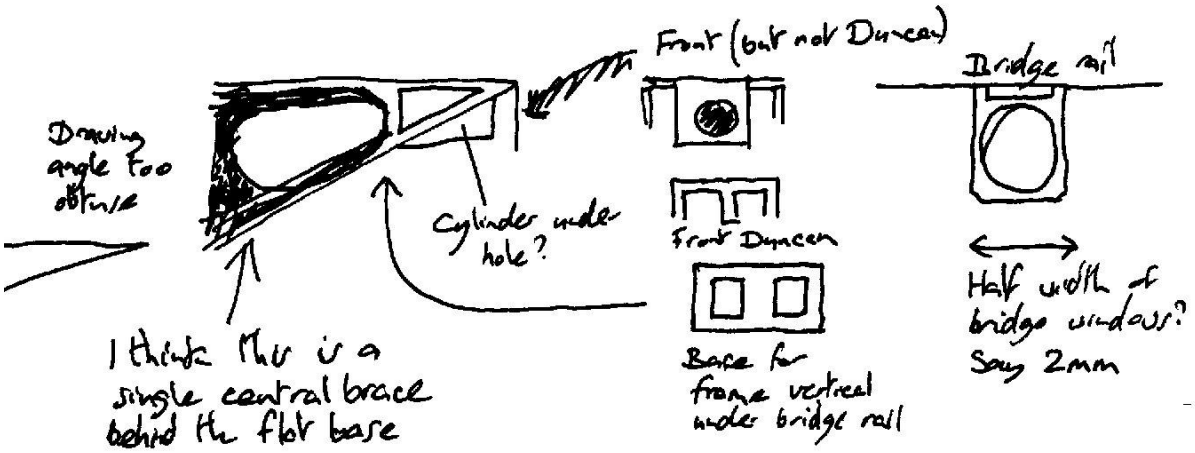
Noticed that the bridge wing ladder down to 01 Deck is about six feet away from the bridge wing! I don't think I can do anything about that: the ladder position is correct compared to doors and other moulded details on the bulkhead, so it is probably the bridge wing that is too short.

Time to build the chin frame for the bridge. A stroke of luck: I notice that there are triangular brace pieces in the Atlantic PE Sea Ceptor set that look ideal for the side pieces supporting the frame top.

[40] Master Model (Poland) SM700-047 Set of universal tapered masts No1 (length = 60mm) https://www.master-model.pl/product/sm-700-047.html . Ordered two sets to be sure of an exact match of the port-starboard pair.

I took a scrap of brass sheet from the PE fret and drilled 1.5mm holes in it with a DIY drill, HSS bit and drill press. I then cut the main part around the hole, scoring with a knife and bending back and forth to break it off. The first attempt I cut too close to the hole. I left plenty of margin on

Today, 27 May 2024, HMS Duncan sails from Portsmouth bound for the Red Sea, where she will relieve HMS Diamond. Like HMS Diamond, she will face action for the first time, defending international shipping using her Aster missiles to engage Yemeni Houthi drones and missiles, and likely coming under attack herself. May she and her crew be safe.


Front (but not Duncan)
Bridge rail
Drawing angle too obtuse
Cylinder under hole?
Front Duncan
Half width of bridge window? Say 2mm
I think there is a single central brace behind the flat base
Base for frame vertical under bridge rail

the second attempt and filed it down with a diamond file until I had a strip 2mm wide with a hole in it. I cut off and filed the outer end and, with the file, truncated the corners as on the original. I cut another piece of brass to form

the middle base plate, and bent over the top edge in the PE bender to give an edge to glue to. I then fixed the two delightful little triangles from the Sea Ceptor PE set in the angle with CA glue. I cut a piece of styrene to form the central rear brace between the top, the base plate and the bulkhead. Finally, I took a tiny strip of brass

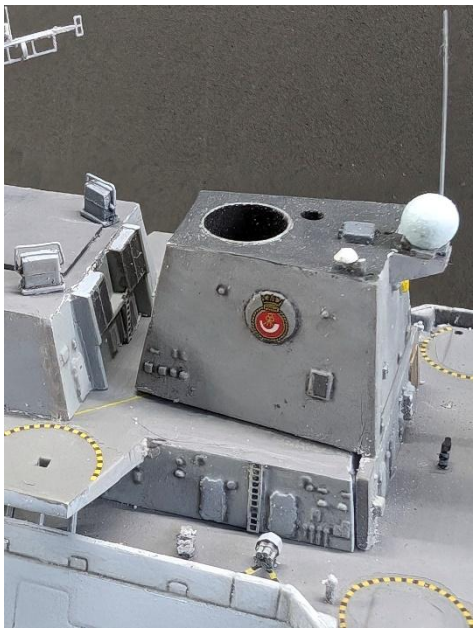
– too small to lift with tweezers – managed to bend the end of it at 90° and glued it to the front edge to form the dropper. The finished part was primed with VMS Metal Prep and black Vallejo primer and painted – three different colours for this tiny piece! Fixed in place with Ultra Glue, it looks great.

Just above it, I needed to fix the ship's badge I made earlier. I wasn't entirely happy with it, so I decided to have another go at the hunting horn – especially after I noticed that I had painted it facing the wrong way! I painted it out in red and put in the horn using one of the ultra-fine nail art brushes I bought recently. I thought it looked better. I also painted the edges in New Wood for the wooden plaque, before gluing in place.

At the same time, I made and painted a new antenna from 0.2mm brass rod to replace the one lost from the starboard aft yardarm.

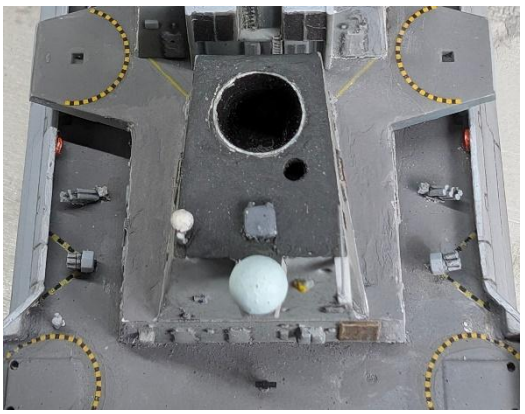
I glued the main uptake (funnel) unit in place with Ultra Glue, after lengthy cutting and sanding away plastic to get it to fit flush to the deck, including removing all of the remaining deck part former. Once in place, I had a gap on the port side. I tried putting superglue in the gap and forcing it shut, but the glue could not hold it closed. The join will still need filling.

I added generous amounts of Perfect Plastic Putty to the joints and smoothed them with a wetted carving tool. For once this left a good finish around the base of the funnel. I cleaned up with wet cotton buds.

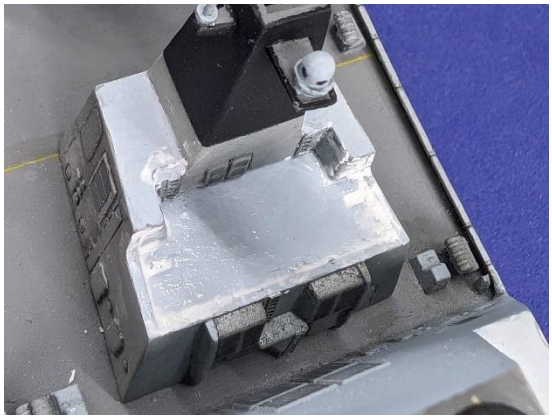


While the filler was drying, I primed the three spike antennas with VMS Metal Prep, and while those were drying, I refitted the bridge wing life ring ejector racks. I used a generous blob of 15-minute Araldite on each, intending that it would have the strength to hold the rack securely without it having to be flush against the bridge rail, because photos show that the racks stand vertical, not conformed to the slope of the bridge rail. This seemed to have worked well, but after several hours, the epoxy had not cured! I have had problems before with the two-part Araldite in a syringe; the different viscosities seem to dispense at very different rates, making it hard to mix equal quantities of resin and hardener. After 24 hours, one side was fixed firmly, but the other was still very loose and showed no sign of the epoxy curing. I can only guess that I used the same cocktail stick to stir and apply the glue, and I could have applied a blob of unmixed adhesive or hardener. I repeated the process, this time applying with different tool. Of course all this messing has left traces of glue on neighbouring surfaces.

The filler around the funnel looks generally good. I gave it another application, mainly on the corners that needed to be built up, trimming and flattening with an old, wet knife blade. After a little more cleanup and light sanding, I covered all the filler with Mr Aqueous Surfacer 1000, being sure to fill any visible cracks or pits. I will leave to cure before inspecting and sanding, but I am optimistic. The corners look nice and square. After another small application of filler, I sanded and painted in deck colour. The result is acceptable; there is some unevenness, particularly along the edges, but I think I can live with it, at last for now.



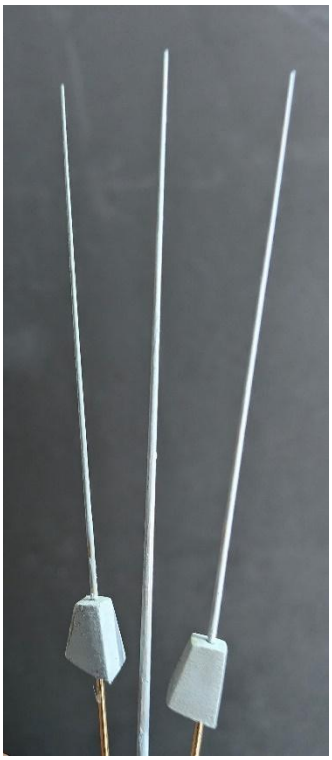
After shaving a small amount of plastic for better fit, I glued on the mainmast module using Extra Thin: after the previous experience, I wanted to be able to apply pressure during the drying time to get the best possible fit. There are



minimal gaps around the bottom. I filled all the top gaps and the locating slots for the antenna bases with Perfect Plastic Putty. The system is to apply putty neat, generously, scrape off with a wetted tool and then clean up with a wet cotton bud. A second application was added to smooth the gradient from the edges, slightly high, to the deck, and to fill some cracks, and sanded back. I painted in +2 shade to see the surfaces, and they were not too bad, but some further sanding was needed; but I decided to coat the lower, aft deck with Mr Aqueous Surfacer 1000 to even out the surface – I am very unsure about this product, though, as it does not seem to self-level in fact the opposite. After sanding I repainted this deck a shade darker, as it was before. The result was not great, but acceptable. Only at this point did I remember seeing on photos that there is square plinth occupying the middle part of this deck, similar to behind the foremast, that I should add from styrene sheet.

The whip antennas and final details

I started on the 10m HF antennas. I cleaned up the two kit bases, cutting off the locating tab and the antenna. The moulded detail faces outboard, and I marked the port and starboard pieces. I drilled 0.5mm holes through the bases, starting top centre but trying to drill parallel to the inner forward edge, to get the slope. I expect to have to drill a bigger hole to get enough play for angle adjustment. The antennas will be cut at a length of 32.8mm: 28.6mm for the 10m antenna, plus 4.2mm for the base; though I will cut long first and test fit.



I painted the antennas and bases in +2 shade at the same time as the decks. I made cardboard jigs to get

the angles right, after printing pictures of a protractor and gluing them to thick cardboard. I hope to support these jigs with Blu-tack; getting them level is critical, or the carefully-measured angle means nothing.

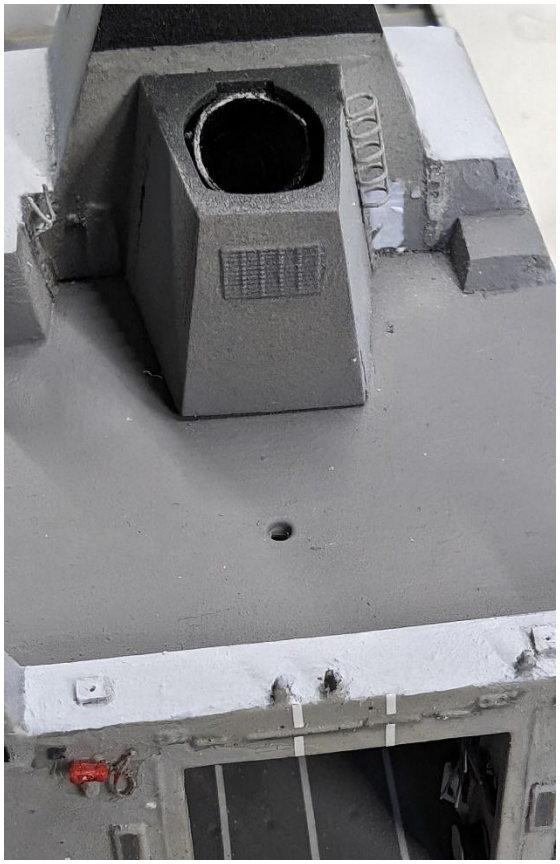
It has been a very productive month, with the main build of the ship nearing completion!

June 2024

I drilled out larger holes in the antenna bases (0.8mm) to give them some play, and cut the antennas to length, including the height of the bases. For the aft antenna, I cut it with a few mm extra and marked the length with a pen. During this process I managed to bend one of the antennas quite badly (see below – the DSPIAE drill doesn't bore a clean hole and I tried to force it in), so I had to restore it by rolling between flat metal surfaces. That damaged the paint, so I repainted. I glued the antenna bases on, checking position from photos (the kit locating holes were wrongly positioned).

I cut the plinth on the guillotine from 0.3mm styrene sheet, 9 x 12mm. Primed and painted, again leaving the starboard and aft edges black as shadows, and glued on. It is positioned slightly off centre, to port, leaving clear paths to both doors.

Nearly finished, as I said, but off I go down more rabbit-holes… First, the port side of the aft uptake (funnel) needs repainting, ideally by airbrush, and masking will be much easier without the aft 10m antenna in the middle of the deck. Second, I noticed that the starboard ladder on the starboard side of the aft mast has been knocked off in sanding, and that must be a sign: I must, despite my earlier vows[41], put the radar-absorbent tiles on that surface and its neighbours. The presence of the ladder was part of the reason for not attempting it. So I scraped off the door with a chisel blade, and got out my roll of aluminium tape. Then I remembered the other reason why this had been on the "too difficult" list: the big vent on the aft side of the uptake. That surface also needs to be covered with tiles, and any thickness will make the vent look wrong. On the other hand, scraping off the vent and putting it back on top of the tiles sounds hazardous – what if it doesn't come off in one piece? Can I draw the tile lines directly onto the plastic?



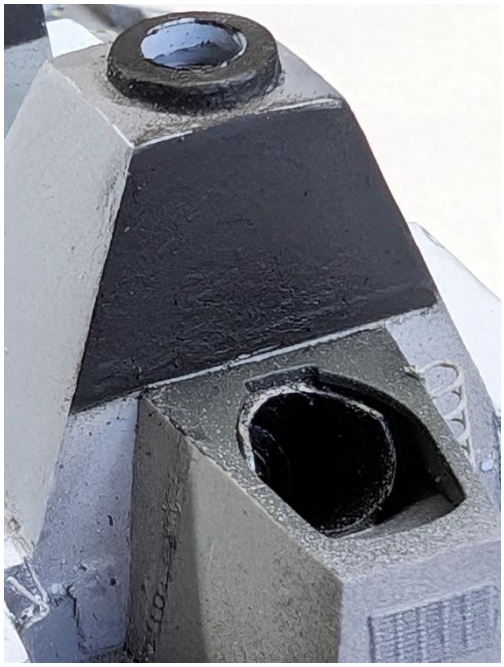
Hole for the antenna in the wrong place; incorrect gap between mast black surface and top of aft uptake; surfaces to be covered in radar-absorbent tiles.

Previously I had struggled to see exactly where the tiles should go. My photo library must have expanded, because I found no difficulty this time, at least assuming that all the Type 45s are the same (and I found nothing to indicate the contrary). The whole of the bulkhead below the black surface on the aft side of the aft mast, to the starboard side of the uptake, is covered (apart from the door). The box that abuts it is not, not even on its aft surface. The aft surface of the uptake is fully covered, apart from the vent. Measuring the spaces on the model and counting tiles on photos, the tiles should be 0.8mm square.

[41] See page 24.

And now I notice a painting error: there should be no gap, or just a tiny gap, between the funnel and the black-painted aft surface of the mast. How did I get that wrong?[42] I didn't just follow the kit instructions, because they are hopelessly wrong – they don't have any black paint here at all!

And another one! The hole for the aft antenna, on the hangar roof, is in the wrong place. Airfix have put it 4mm too far forward: I worked out the position by measuring three photos, and was gratified when the calculation result came out identically on each: the antenna should be 29% of the distance from the aft rail to the back of the funnel, which on the model is 19.7mm, placing the antenna 5.7mm from the rail. I filled the hole with putty and drilled a new small hole (0.6mm), praying that the drill would not hit the gantry crane in the hangar, which it inevitably did; fortunately, it just pushed it out of place, and it easily went back. I cut the bottom of the antenna shorter; the smaller hole gives it more stability without needing a great depth to secure it. If the glue reaches the gantry crane, it might be stronger!



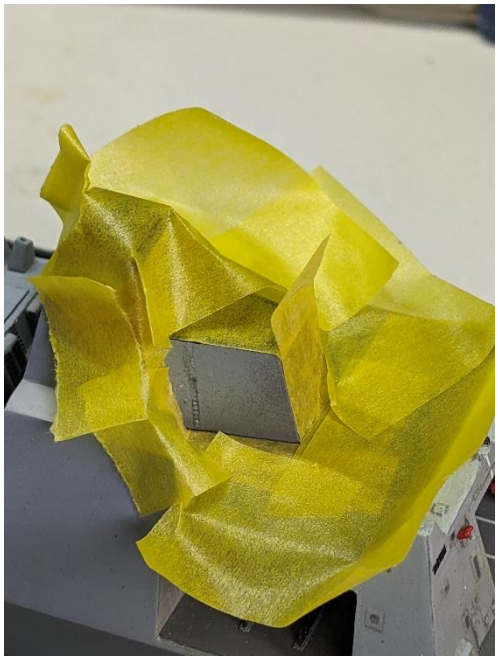
I masked up the model to respray the black area on the aft side of the aft mast, bringing it down so there is only a narrow strip of grey between the black surface and the funnel. I had considerable difficulty in getting tape to stick to small, matt areas, especially the crucial funnel edges. In the end I used a Hasegawa metal stencil with piece of tape stuck to it to create the straight edge for the bottom line. This worked almost perfectly, though it seems to have sagged on one side, in an area that needs repainting anyway. After several coats of black, I got a satisfactory surface. There was some spray under the tape on one side, but the excess paint almost all scraped off with a knife.

[42] I noted this in September 2022 (see page 16) so it's astonishing that I got it wrong when I painted in, I think October 2022, and that I have not noticed since!

Only a day or two later did I notice that some black had escaped the masking and over sprayed onto the starboard side of the aft mast, which will also now have to be repainted! In fact I managed to scratch or sand most of this off.

I touched up the top of the aft uptake (funnel) in Panzer Dark Grey, which was fine. But when I also touched up the surround of the forward uptake, the colours didn't match. I tried Sea Grey instead, but that also didn't match. I must have mixed the previous colour, but didn't record the mix! I mixed Sea Grey and Panzer Dark Grey 50/50, giving a shade close to what was there before, and repainted the whole area.

I have bought a 0.05mm Copic Multiliner light grey pen[43], which looks good for drawing the tile lines. I have decided to try to draw directly onto the kit parts, recognising that I may have to repaint if I make errors. I made a tiny ruler from brass fret, which turns out to be 1.4mm wide. By using it in two passes to draw alternate lines and conforming it to the previous line, I hope I can create exact 0.8mm squares.



I brush painted the bulkheads due to receive the "tiles", in Sky Grey. I then did a lot of masking for a small amount of airbrushing, and repainted the port side of the aft uptake, damaged by overspray earlier, in -1 (2:1 Sky Grey and Wolf Grey). That came out nicely, but it was concerning to note that the adjacent Sky Grey looked lighter than the mix. In other words, Sky Grey is actually lighter in tone than Wolf Grey. Which is why my carefully-devised colour scheme does not always look right. I repainted the Sky Grey I had just done in Pale Blue Grey as a darker shade, as it looked too light in that position. It still looks light against the Sky

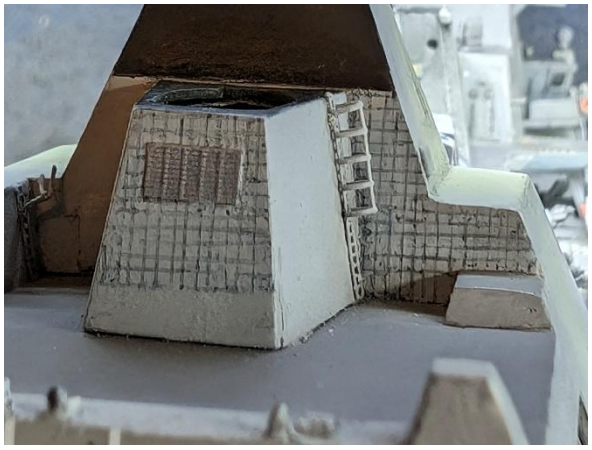
[43] The 0.03mm Multiliners I used earlier (page 24) had died.

Grey! And in fact the surfaces looked rough, so I sanded all the areas I had just painted in grey colours, then gave them a coat of Mr Surfacer to fill pits.

I sanded and repainted in Pale Blue Grey. A little later, I realised I could not colour match the aft side of the funnel, so I also repainted that in Pale Blue Grey, apart from the vent.

I started drawing on the tile lines with the grey pen. Importantly, I managed to mount the ship firmly and stably in a position that allowed me to see what I was doing in good light and to get close to the relevant parts of the model, by using a spring clamp mounted in a vice. I tried various methods of sticking the brass miniature ruler in place (Blu-tack and Post-it notes) but I could not get enough tack to hold it firmly in place. I just held the end of the ruler in a pair of locking tweezers. There were a lot of errors (ruler or pen slipped, line too heavy, misjudged position) but I painted out the errors and re-drew until satisfied. Part-way through, I tried using ordinary Sellotape attached to the brass ruler. That was much better – it held the ruler in place firmly enough to draw the line more accurately. I was afraid the Sellotape would leave glue residues, but none were apparent. I had to replace the Copic Multiliner pen when the first one stopped working, and I damaged it in trying to fix it.[44] After several sessions of drawing and painting out lines, I got to an acceptable result. It's an open question whether it's actually any better than not adding this detail at all. I toned down the lines by

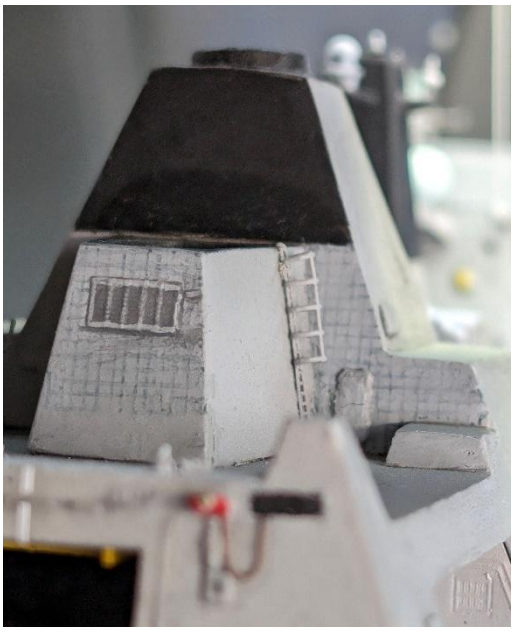
[44] Using it on paint that wasn't fully cured probably stopped it working. Sanding the tip to remove paint worked, but rapidly wore down the nib. I am convinced that online advice to use alcohol to revive these pens is wrong – the Multiliners do not seem to be alcohol based, and alcohol kills them instantly. Now I know.



Tiles before toning down with a wash.

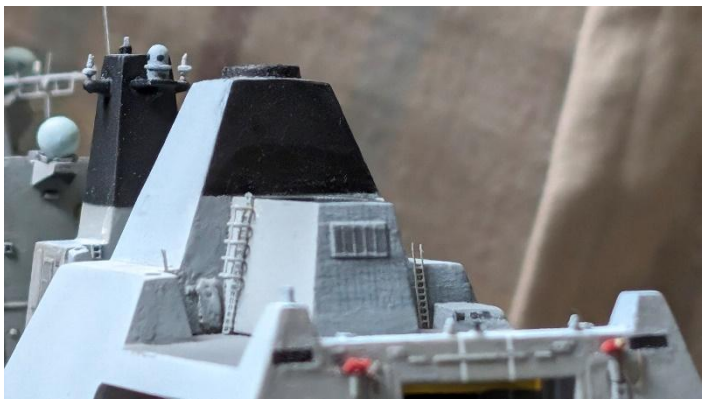
applying a wash of the base colour, and repainted the intake, using a dark grey wash for the grilles and painting on dark grey shadow. I painted and glued on the door.

I also re-fixed the three ladders on this deck. The two normal ladders had got battered and were covered in thick paint, so I removed the one still in place and made new ladders from PE ladder stock and painted them. Those and the cage ladder were glued on with Ultra Glue.

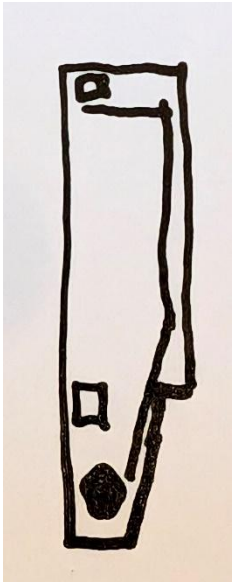


I had started to think that this hangar roof deck has a “plinth”, similar to the previous two upper decks, but I concluded that the square shape visible on photos is formed of jackstays, running fore and aft at the level of the enclosed ladders, and across just forward of the antenna. I measured them to be 18x24mm. Also, Duncan (at least) has an additional hatch on this deck, portside near the enclosed ladder.

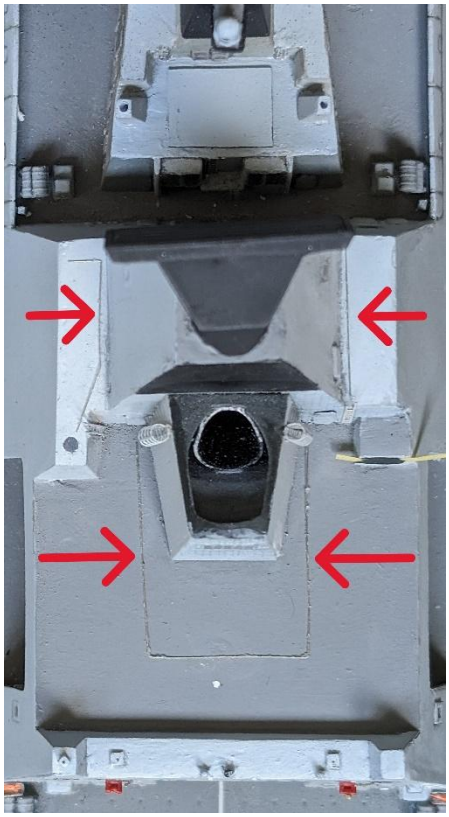
It looks as if there are also jackstays on the walkways either side of the aft mast. I am very unsure of their exact layout, but on the starboard side I think there is single run fore-aft close to the mast bulkhead. Port side, a more complicated pattern with a diagonal run from the black circle to the bulkhead, then fore-aft, then turning 90° just before the end and running across. There may also be jackstays on the



platforms either side of the polemast, but they are very hard to make out in photographs, so probably best omitted.



I decided to make the jackstays from unpainted 0.1mm nickel-silver rod, which I suspect will look better than the painted 0.1mm wire I used on the foredeck. Bending and fixing with Ultra Glue was not too difficult, though some lines are not entirely straight.

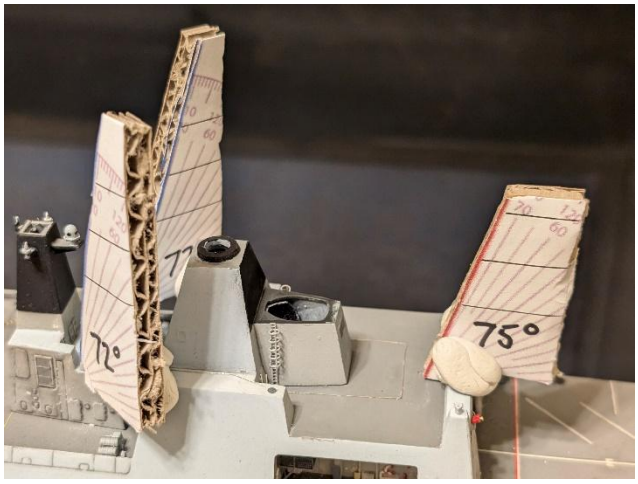


The hangar deck jackstays made me realise that I had drilled the hole for the HF whip antenna well off centre! I must have assumed that the two “horns” above the hangar door were central, which they aren’t. I filled the hole and re-drilled, measuring carefully.

I set about adding the three dark squares to the box on the starboard side of the deck. I tried using small squares of masking tape over Panzer Dark Grey paint, but as usual I could not get clear definition by brush painting. All the squares were misshapen. I tried again, this time making a 1mm high grey stripe, sealing the edges of the tape with dark grey paint. I got a neat enough dark stripe, but when I tried to do the verticals, again with tape, I failed again. I repainted the stripe by hand, and then did the verticals by hand too, using one of the fine nail art brushes. That got a pleasing look, though the surface is rough and needed sanding once dry.

Amongst all of this, I painted and fitted a replacement nozzle for the fire extinguisher

near the hangar door, replacing one lost earlier. I also filled a crack on the starboard side of the aft uptake, and while I had the Perfect Plastic Putty out, had another go at the awful surface of the hangar bulkhead to the right of the caboose, painting both in Sky Grey.



Time to add the 10m whip antennas. I found I needed to re-drill the mounting blocks with a conventional 0.9mm drill, because, oddly, the DSPIAE drill had not made a clean hole that the antennas would drop into all the way down: the pitch of the fluting on the drill bits is long, and it seems it drills a spiral hole! Once done, I carefully adjusted the mounting of the model until it was level. I stuck the cardboard jigs in place using fresh white Blu-tack, and adjusted them until they were exactly vertical (using a set-square with built-in sprit level). The forward pair needed to be splayed at 90 to each other, which I checked with the set square and a square sanding pad. Once fully satisfied, I glued the antennas in their holes, rested against the angled surface of the jigs, using VMS Flexy Slow CA. Once the glue was fully dry, the jigs were removed and I am delighted with the result. The angles look perfect to me.

I glued the polemast in place, completing the antenna fit. The tops of the holes around the antennas in the mounting blocks and the gaps around the polemast base were filled with putty and painted.

There is a big yellow sign on each side of the polemast base, about the width of a door. I used signs from the Atlantic signs and lines set, applying the decals with Micro Set.

At this point I removed the model from the vice and clamp. I glued the miniguns, knocked off earlier, back in position.

I made a new hatch from a scrap of 1mm sheet styrene for the hangar roof. I cut several lengths of 2.5mm wire, 4mm long to make the hatch retaining posts[45]. I noticed a feature not previously noted on the forward uptake, a box with a cylindrical "chimney" on the port side of the roof, athwart the uptake opening. I made that from a scrap of styrene sheet and scrap of rod. All were primed, painted and glued in place.

The hatches, along with many of the doors, should have handwheels. I ordered some 3D printed handwheels by Black Cat Models, along with some flags and Royal Navy carrier deck crew figures from Starling Models.

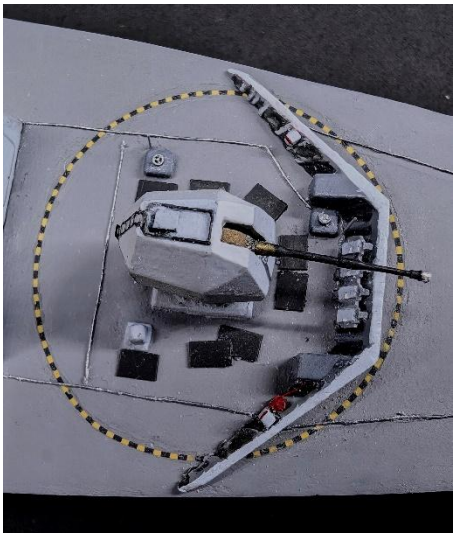
But that concludes the actual construction of the model, apart from railings and rigging … apart from the sirens on the foremast sponsons, the pulley arrangement on the aft mast, the yellow lanterns on the life raft ejectors, the shot mats around the gun, the safety ropes, the GPMGs, and the cameras if I do them… Black Cat Models does a set of 3D printed speakers and cameras that I have also now ordered, direct from them.

July 2024

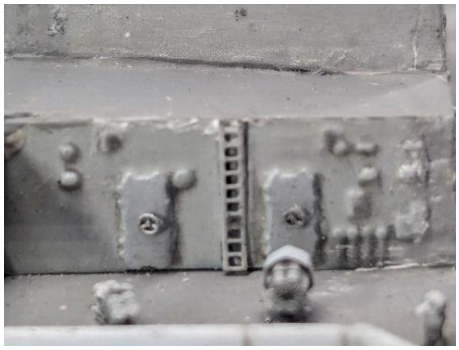
I made the shot mats from thin plastic sheet, 4x3mm – though in retrospect, they should probably be a little larger. Primed and painted them Panzer Dark Grey and glued them in place, following a photo for placement. Two mats

[45] The real hatch supports seem to be pieces of I-beam steel girder. I rejected 0.5mm square plastic rod as too chunky. I decided not to model the protruding catch part at the top.

overlap, and I softened the join with Extra Thin before fixing, hoping they would look natural. Glued in place with a dab of Ultra Glue.



The handwheels arrived, and they are beautiful. The smaller size are three-spoked, but I will ignore that. I primed and painted them silver by airbrush. I fitted the smaller-size wheels to all the deck hatches, with the exception of the one on the prow, which does not seem to have one. They look great, though it took a while to figure out a technique to handle them – cut them off into a cup, place a spot of CA on the hatch, and position with tweezers – simpler than other techniques I tried.



I repeated my earlier survey of doors in photos (Appendix 4). The red corner flashes on certain doors were added with a fine brush, then I glued the wheels in place on the doors that needed them. There were not enough of the larger size wheels in the set, but the smaller ones look equally good.

I noticed I had already knocked off and lost the retaining post for the forward hatch, so I replaced it with my last spare. It seems to be leaning – Mig Ultra Glue is great at keeping parts in place, but not at holding them rigid.

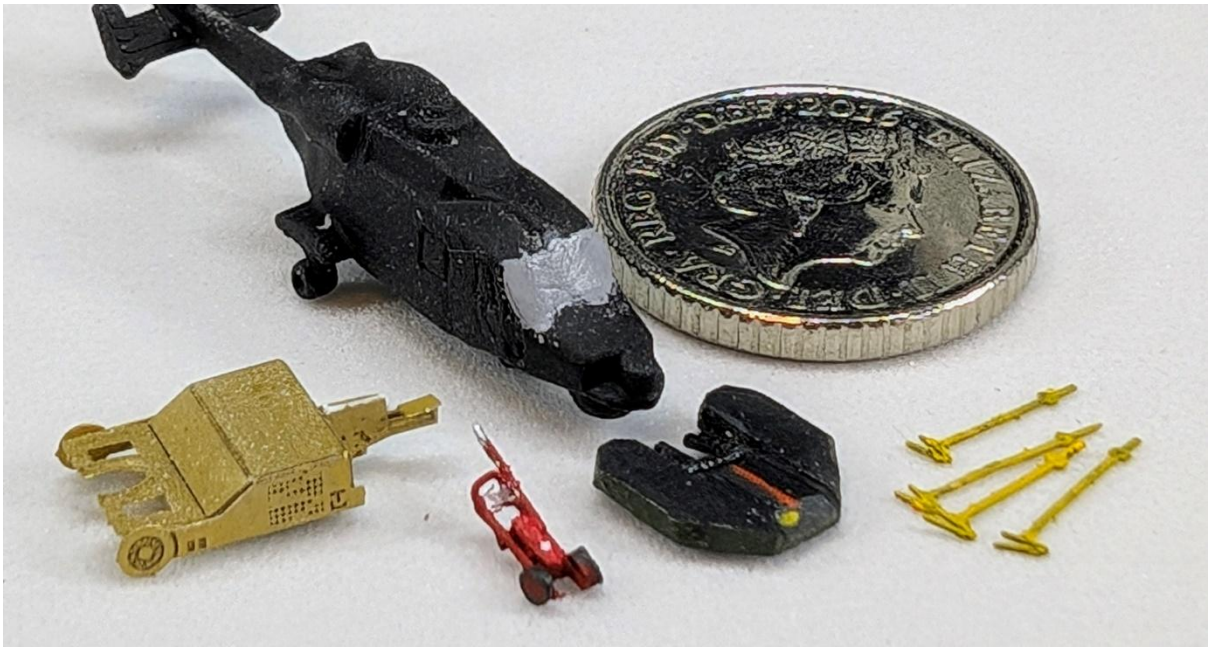
I have been doing a lot of research about ensigns and signal flags, of which more later.

Helicopter deck equipment

As a diversion at this point, I made up the PE remote helicopter mover from the WEM PE set, despite suspecting it was the wrong type. Once done, I located some photos of the real thing, not without difficulty in searching, and

confirmed my suspicion. The one is use[46] is approximately square in overall dimensions, about the same width as the wheels on the Wildcat. I cut an 8mm square of 1mm styrene sheet, drew out the design on it and but it our with a knife and file, adding plastic rod for the mechanism of the tow jaws. I stuck thin plastic bits under it to lift it off the deck – the wheels are not visible. After priming, it was painted Panzer Dark Grey on top, NATO Green on the sides, and Natural Steel for the mechanism. A fine orange line was added down the centreline, and splash of yellow for the warning label.

I couldn't resist also making the fire extinguisher trolley that seems to accompany helicopter operations. 0.2mm brass rod was bent into shape for the frame, and glued on for cross pieces and the long pipe that protrudes to the front. The flat cross piece near the handle, a flat piece of scrap brass,



caused endless trouble, as I couldn't get it stay stuck – suspect my VMS CA glue is getting old, and I have ordered some CA accelerator. Wheels were crude sections of plastic rod. The extinguisher cylinder is plastic rod. Primed and painted red overall, with details added by brush: Vermillion cylinder for

[46] Later identified as the Douglas RAM Handler.

highlight, Tyre Black wheels, silver end on the pipe and spots of white on the flat cross-piece and a dot for a label on the cylinder.

I cleaned up, primed and painted yellow the four rotor blade retaining rods, which I intend to show being removed before flight. I had been wondering how to make them and was pleasantly surprised to find that both the WEM and the Atlantic PE sets contain them. For these primary colours (yellow, red) I should use white primer, not black: it took a lot of coats from the airbrush to get decent colour coverage, and even now the yellow rods are not perfect. Put it down to weathering.

I painted the GPMGs black on the fret.

I half-heartedly began work on the helicopter. The DorsetPrintMan 3d printed Wildcat fuselage I intend to use had visible grooves in the windscreen, so I sanded and covered with Mr Aqueous Surfacer 1000. I am using the Atlantic photo-etch with it. I started by trying to laminate the four small circles as the instructions require, and messed up getting them in alignment, then lost a pair. Instead, I made an equivalent in plastic rod (actually a spare wheel made for the fire trolley).

Repairs and retouches

I backed away from the diversion into doing the helicopter. I used a new bottle of Micro Kristal Klear to fill the three scuttles, applying it with a fine wire. It took two applications, but I think I've got it as good as it's going to get. It might have been better to put in black paint before the clear filling.

I started trying to repair paint damage. Using Ocean Grey, I tried to touch up scuffs and white patches on the starboard lower hull, with a brush. I experimented with adding Vallejo Matt Medium to counter my experience that brush-painted Model Air often does not dry fully matt. I had some trouble, with some paint seeming to dry lighter than the hull colour, and some darker. I tried adding a drop of UK Azure Blue to the paint, but it didn't help. I still have light and dark patches after several goes. I tried wet sanding with 2500 grit glass paper, but it didn't achieve the blending I hoped, though it did improve the surface. I will do more of this. I similarly sanded a few rough areas on other parts of the model.

I touched up the hangar bulkhead where I previously did some late filling.

I stuck down one of the jackstays that was lifting.

In handling I knocked off the cap on the polemast, so glued that back on and touched up some scratching on the black paint. I suspect I may have bent the brass mast very slightly, but it's had to see and therefore not worth risking trying to bend it back. I put the model back in the clamp and vice as I did before, for stable access.

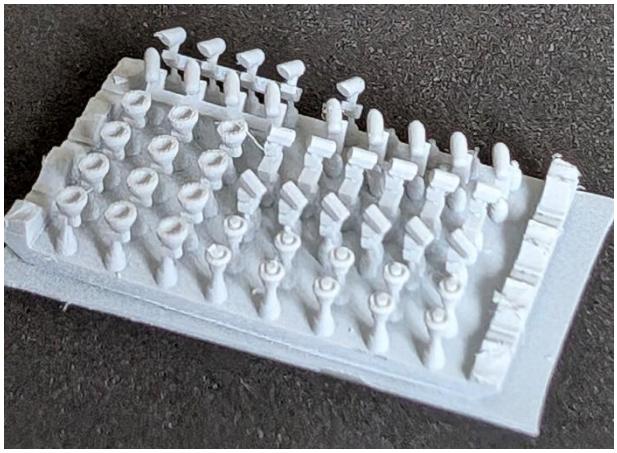
I added more Micro Kristal Klear to the three scuttles, hoping to get a smooth, shiny surface – it was looking crazed. After about four applications, I was satisfied.

I fixed back the boat bay mezzanine platform that fell off (and was squashed) earlier.

Returning to the hull side, Ocean Grey seems to dry slightly lighter than the existing paint. Too possible reasons: most likely, the matt varnish has slightly darkened the previous coats. Also, I added a touch of UK Azure Blue to the original paint, though so little as to hardly be noticeable. I made a colour chart of Ocean Grey mixed with small amounts of black or blue. None were obviously better than the neat Ocean Grey. But I decided on plan. I would brush paint most of the starboard lower hull with Ocean Grey with a tiny amount of Dark Mediterranean Blue, thinned around 50/50 with Vallejo Glaze Medium and with Vallejo Matt Medium added. The idea was to blend the existing colour with new, rather than to re-cover entirely. After multiple coats in two sessions, this seems to be very successful, at the cost of further thickening the paint. The surface will need sanding again due to dust and small paint blobs.

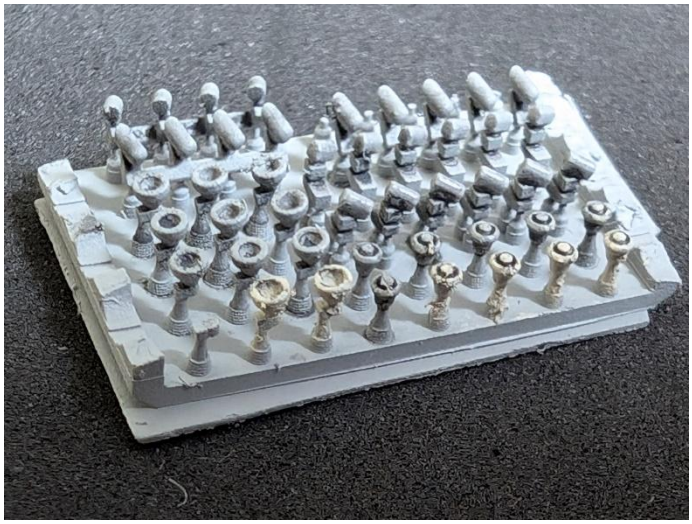
I cut small pieces of primed wire to make the two lanterns (?) attached to the forward life belt ejectors and painted them yellow.

The Black Cat loudspeakers and cameras set[47] arrived. As with the previous Black Cat set, I am hugely impressed by the detail and crisp printing. I can't wait to try the CCTV cameras. I primed them in white Vallejo primer by airbrush, alongside the remaining North Star crew figures. They were then sprayed Grey and pinwashed with a grey oil wash.



I also pinwashed some details on the back of the mainmast that I repainted earlier.

The largest speakers are not quite big enough to be the ship's sirens, but I went with them anyway, and they look good.



For the loudhailers for the bridge wings, I used the smaller loudspeakers from the Black Cat set, painted an ivory colour and mounted on a plinth of dark grey scrap plastic: I tried making wire frames but they looked heavy and ugly.

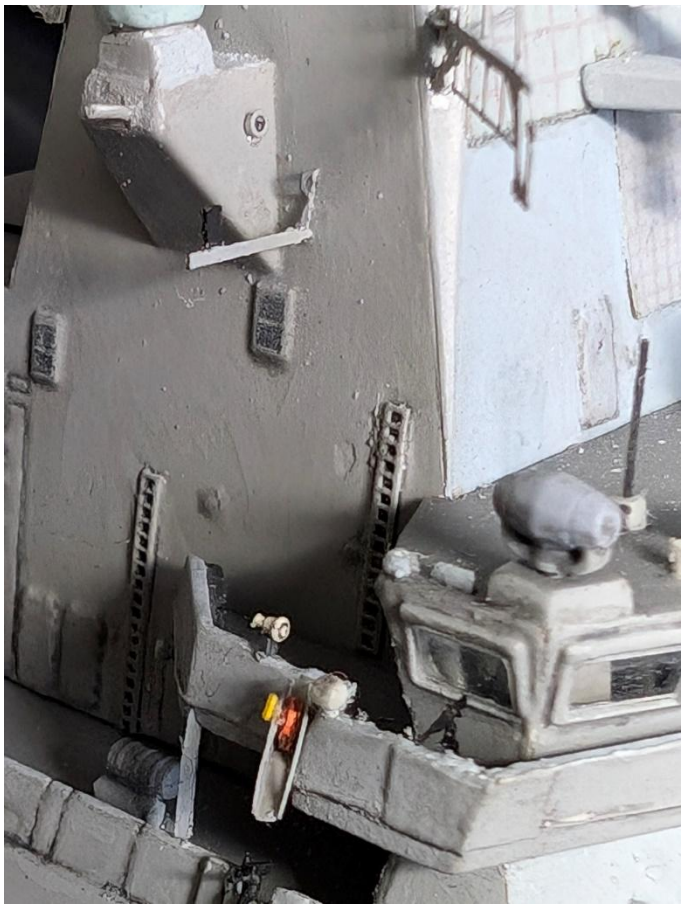
I cut off the blobs of plastic representing the loudhailers on the model, along with the single Aldis signal lamp: all were in the wrong places. I put the kit Aldis lamp back in the correct position. The other side does not have one; it may have got knocked off early on, but photos often show the ship without one, so I will leave it off. The loudhailers were glued in place, and they look gorgeous.

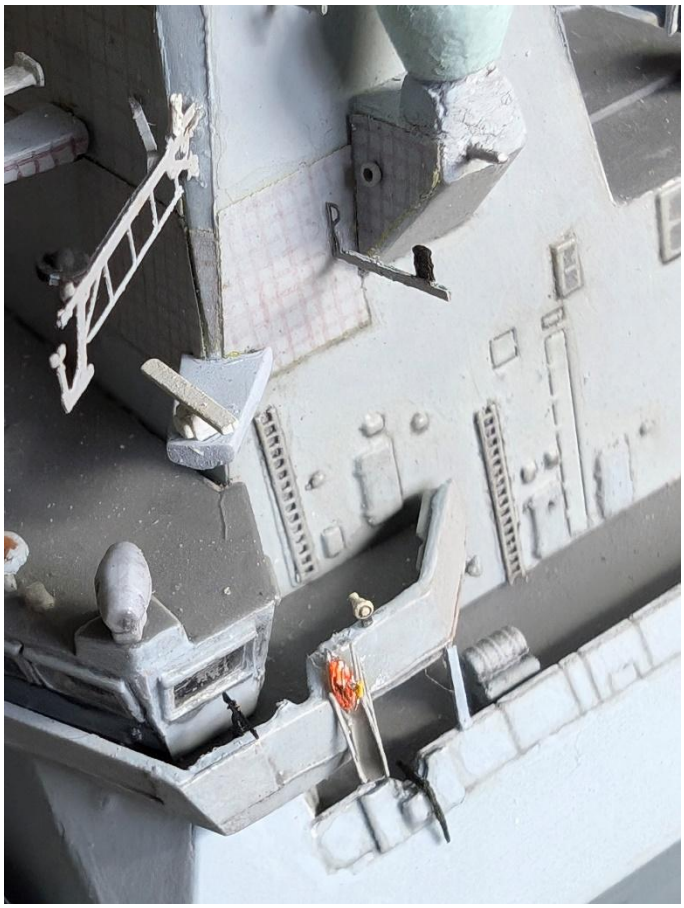
The GPMGs, previously painted black on the PE fret, were given a metallic look with a pencil, and those for the bridge wings glued in place, first snipping off

[47] Assorted Set of US Navy Cameras, Projectors and Loudspeakers, Modern Period AC350092 by Black Cat Models.

the kit's plastic blob. They look very nice but might be bit high; I will consider whether they look silly once crew figures are added. I moved the starboard GMPG after the photo was taken, to centre it behind the armour.

I noticed that I had not refixed the small white antenna on the starboard end of the bridge roof, so I glued it back on.





I ordered and received an acrylic case from Puffin Plastics. Very pleased with it, though I do wonder if I could not have managed with 3mm acrylic rather than their recommendation of 4mm (for strength, given the size). It is much taller than the model, so I have plenty of space for landscaping.

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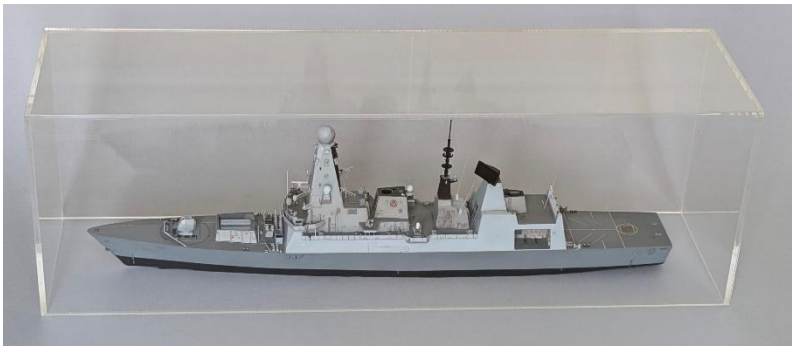
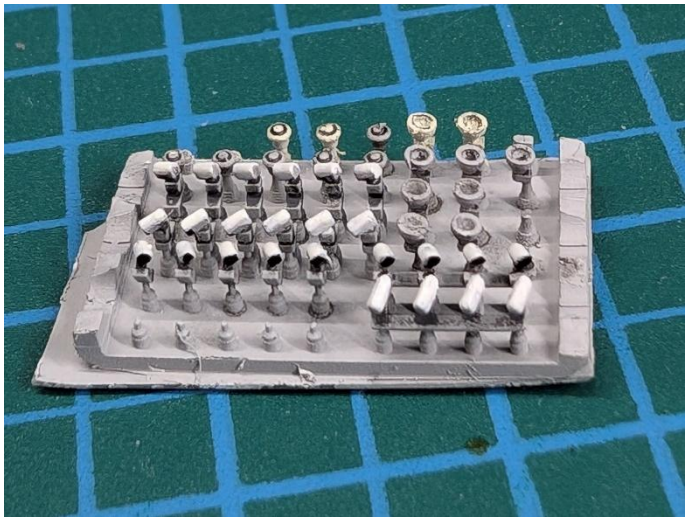


I glued on the aft GPMGs with Ultra glue, trimming the mounts so the guns were in the shield embrasures.

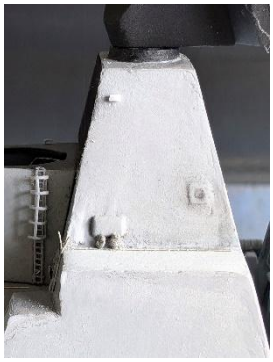
The 3D-printed cameras were painted on the fret by putting

blob of black on the lens end, then painting the camera bodies in Insignia White. I glued three cameras in place, two below the bridge, on the bulges provided in the kit, and the other below the ball bearing radome, behind the funnel.



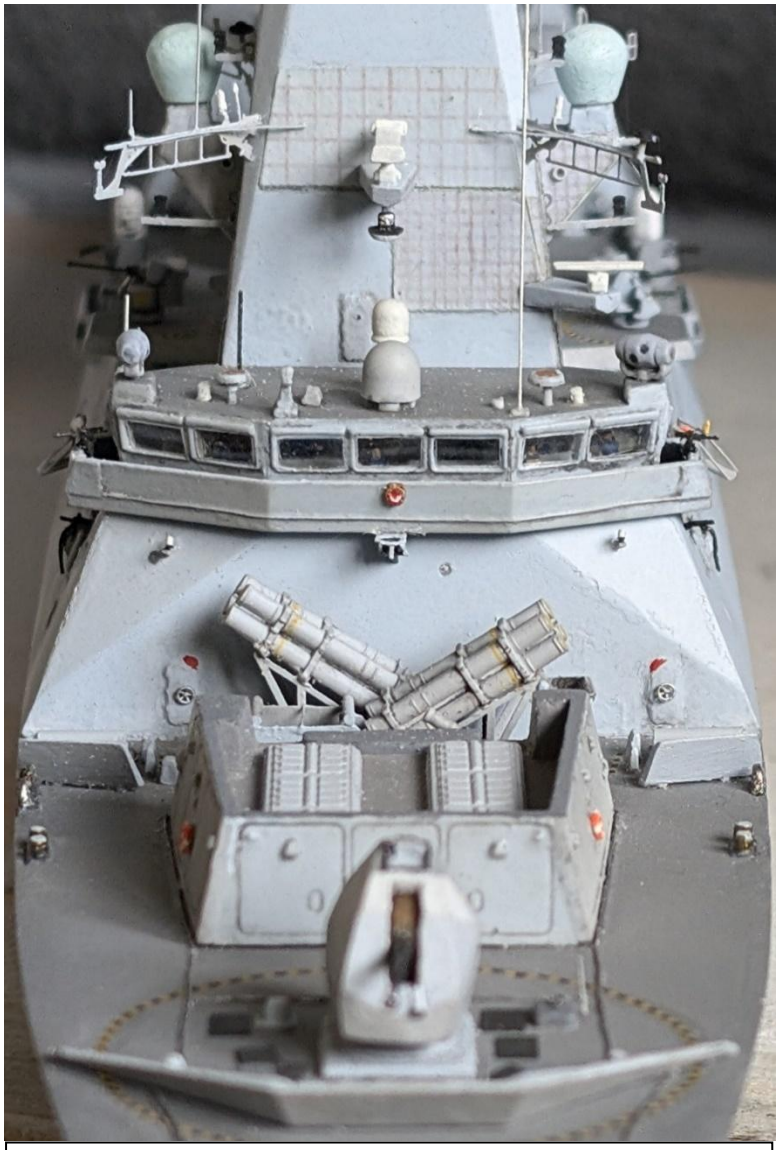
I started cleaning up the surface of the upper starboard hull side, partly using my new DSPIAE reciprocating sander tool with 800 grit paper. I like

the tool very much. I am going to airbrush the paint on that area.



I added the tiny upper rectangle of plastic to represent the top of the bosun's chair equipment on the starboard side of the aft mast and added two blobs of epoxy putty below the lower box. I still have no clear reference picture, but my guess is that these represent coils of rope.

The aft side of the main funnel has visible join line that I decided needed tackling. I added a couple of coats of Mr Aqueous Surfacer 1000 to level the join. At the same time, the starboard side



I must admit that I may be obsessed with details. Added to the kit in this picture, starting from the top, are PE antennas on the mast sides, the radar absorbent tiles (masking tape painted and lines drawn with a fine pen), PE comms yardarms modified with added brass and plastic details, 3D-printed sirens, modified 30mm and Phalanx guns with brass barrels (in the background), the white dome (a metal aftermarket part from Atlantic Models), brass antennas, scratch built "mushroom" devices and smaller details on the roof, clear styrene windows, crew figures (barely visible inside), PE GPMG's, just visible behind them PE life ring ejectors with scratch built yellow lanterns, armour plate on the bridge corners, scratch built and hand painted ship's badge, wire strip around the bridge rail, scratch built brass frame under the bridge chin, scratch built minigun emplacements and weapons visible below the bridge wings, CCTV cameras from Black Cat Models, scuttles drilled and filled with Micro Krystal Klear, yellow stripe decals on the Harpoon launchers from a railway modelling set, PE support frames, PE blast deflectors heavily modified, and Black Cat Models 3D-printed handwheels on the doors. This is the cover picture.

of the funnel needed a paint touch-up to correct previous touch-ups. I made multiple attempts to match the colour, which in theory should be Sky Grey, but eventually got close to a match by adding a touch of Panzer Dark Grey to the Sky Grey paint.

On re-inspection in good light, the match was not perfect – the new coat was too cyan/blue, presumably from the Panzer Dark Grey. I tried again, darkening the Sky Grey with a touch of black. I also mixed colours for other minor touch-ups around the model, re-coating until satisfied.

In handling the model I found I could not lie it on its side without damaging the CIWS and SCG barrels, so I attached the big clamp to the wooden block inside the ship, both as a handle and as counterweight to prevent the model rolling too far when on its side.

Time to tackle the big one that I have been putting off. I masked up the starboard upper hull side, including the starboard side of the aft mast, using

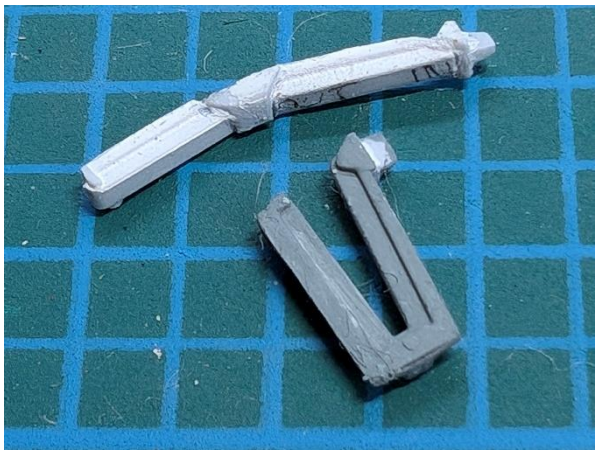
tape, cotton wool in the boat bay and Silly Putty over details. I lightly resprayed almost the entire surface. On first inspection that seems to have worked perfectly, covering the many damaged sections but only muting the dark pinwashing.

The last touch-up at this stage was yet another attempt at the port side of the forward funnel. My previous attempts had again dried too blue/cyan – I don't understand why this is happening. Is Sky Grey somehow showing blue tinge? In the end I repainted the whole surface with several coats of Sky Grey with small amount of Wolf Grey and a tiny touch of black. It looks better than it did before, and the remaining areas of the original, such as the disc round the decal, are close enough in shade not to be noticeable.

At least for now, that concludes the rather dull touch-up stage. I'm as happy with the paint finishes as I can be, though they are far from perfect.

To the boats

I examined all the parts for the Pacific 24 RHIBs and their handling gear. I cut off and tidied up the plastic parts. I decided to stay with the Airfix boats – the Atlantic resin ones are near-identical (surely not copies?) but less well-defined. Identical, apart from the block at the stern of the Airfix boats, which I removed using DSPIAE sprue cutters to make room for the PE frame. The release pin marks in the bow of the boats were filled with putty – I hope they are moulding marks and not a feature, given that the Atlantic boats also have them!



I drilled a small hole in the davit mechanism end to take a length of metal rod to form the boat lifting cable, in due course. I then set about straightening one of the folded kit davit parts, because I want to portray it extended outboard, ready to recover one of the boats. The other (starboard) boat will be shown just recovered. I made three diagonal cuts with a No 11 knife to cut the arms from the hinge parts, then filed the ends to achieve the angle required. Most important was the centre hinge part, on

which I undercut the top shape to preserve it, then cut a triangle shape in the rest of the part to reverse the flat ends that would be glued to. For the triangular hinge to fit against the bulkhead, I filed down the opposite side to attach the extended arm pointing away. I glued the parts with Extra Thin, pushing them well together to gain strength form the dissolved plastic. I let slight kink in the arm; photos suggest it does not extend fully straight, though I am not sure about this. A wire extends from the end back to the base. To improvise something vaguely to represent the complex equipment atop the end of the davit arm, I added lozenge of plastic sheet to the top of both arms, and three pieces of scrap plastic roughly representing details on the aftward side of the extended arm – they would not show on the folded version.. I think the davit arm will look OK once cleaned up. I added a scrap of plastic sheet to neaten up the arm at the fold.

Pacific 24's in Royal Navy service have a an integral diesel engine and fixed waterjet drive, not the two outboards implied by blocks on the models, so I sanded down the motors, filled the area with filler and

After sanding down the filler, added the drive housing with a low-level piece of plastic rod.

I painted the boat bottoms and floors in Medium Grey, the upperworks and tops of the inflatable floats Sky Grey, and the lower inflatable floats Tyre Black. Having identified the boat that is to be shown in the water, I then highlighted the main features in Wolf Grey, and the float tops in a mix of Sky Grey

and Wolf Grey. The seats were painted NATO Black. I used a fine liner brush to paint the dividing line between the black and grey on the upper surfaces, and after several tries, alternating black and grey paint, managed to achieve reasonably straight lines. The drives were painted Insignia White and the darker bow section Medium Sea Grey.

I cleaned up, folded and primed the brass pieces. I pierced a hole in the centre of the steadying frames to take the cable. I cut out both the White Ensign and Atlantic Models PE pieces, but selected the Atlantic self-righting frames for the boats. I also primed a strand each of 0.1mm and 0.2mm rod to use as the cable and handling lines. I added a blob of superglue to each side of the brass protrusion representing the blue light on the frames, to give it thickness.

I had a minor disaster with the small pieces, by attempting to prime them with Vallejo primer (over VMS Metal Prep) lying flat on a previously-painted surface. They stuck fast, and the primer merged with the underlying paint, which peeled off the substrate and came away with the parts. I soaked them in VMS Clean Slate to start again.

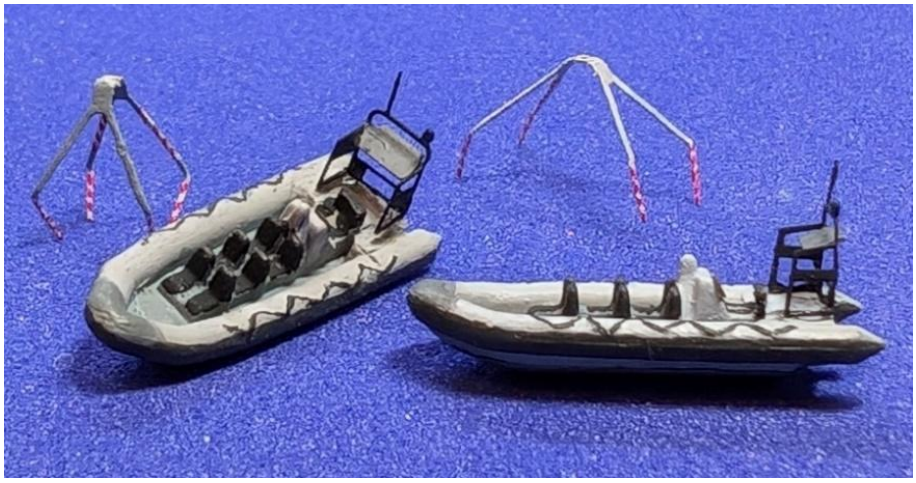
I painted the grab lines on the top of the boat sides. I also noticed that the top rib of the underside of the boats is black, with vertical black stripe at the bow., so I painted these. I first tried drybrushing, but at this small size I was getting paint on the surface before the raised features were sufficiently covered. I painted the features with a fine lining brush, then tidied up the edges with the underlying colour.

The extended davit arm was painted in three colours: Medium Grey for the section in deep shade inside the boat bay, Sky Grey outside, then upper highlights in Wolf Grey. A piece of the newly black-primed 0.1mm nickel rod was glued on to represent the cable that extends from the end back to the base, across the crook of the arm.

The boat stabilising frames were painted, with the white parts in Insignia White. The red diagonal stripes were added with a fine liner brush. After only two attempts I was pleased with the effect, though far from perfect and with

about half as many stripes as there should be. Translating photos of the 3D arms onto the 2D brass, the whole of the lower arms, and a long panel on the inside face only of the upper arms, were covered in the red and white stripes.

For the boat crews, I selected a number of figures from the North Star and Starling Models sets. To minimise painting once in position, the plan is to paint them before fitting, even though that will mean cutting them up after painting to fit them in and pose them; the figures look big compared the boats.



I sprayed the boat frames and PE details and the crew figures NATO Black. For the crew, this represents the black waterproof coveralls that seem to be worn.

The grey cover and blue light were painted on the frames, then they were glued onto the boats, flush with the stern, along with the steering wheels. I suspect they are well over scale. A few black details were added with a 0.05mm fineliner pen (after the first picture was taken). The boats are finished, apart from the ensigns, crews and grab handles.

Base thoughts

The MDF I ordered for the base arrived, so I worked on it in parallel with doing the boats. In a test fit it looks great. The main thickness is 18mm thick – thick enough to take the switches – 502x141mm. The middle layer is 9x491x130mm and fits inside the case cover, stopping it from sliding off. The

top layer is 3x486x125mm. I will do the seascape on that, before fixing it to the middle layer. It occurs to me that the 18mm base is deep enough to take the battery holder beneath the ship, so it won't be necessary to provide access to the awkward space inside the stern.

I sanded the edges of all the boards with an electric sander (taking care to use a mask and eye protection) using 240 grit sandpaper. I wanted to do that while they remained accessible. I then glued the bottom and middle layers, clamping them to a piece of wood (to prevent warping) and to each other, with all the clamps I could find. I am not an expert woodworker.

I ordered some MDF sealant and primer from Amazon, and another 9mm plank of MDF to make a plinth shaped to the model: I want to create extra depth for the resin water I intend to add. Examining the model and photos, I note that the bow should be raised to make the boot topping line curve up from the stern and lower the spoiler into the water; a 4mm block under the prow is about right. The waterline should then be about 4mm up the hull (perhaps less to allow for waves to be added), leaving a minimum of 2mm of boot topping visible along the entire length, remembering that I painted the boot topping curving up slightly at the stern, as the only way I could get it to cover the stern spoiler. In reality, I think the stern is the low point of the boot topping, but I will set it as it looks best. I shaved off some more plastic underneath the stern to get it to sit closer to the surface when the bow is raised.

I marked out the cut-outs to take the switches in the end of the 18mm MDF board and cut the lines with a chisel.

I marked out the outline of the model on the new 8mm piece of MDF and cut out the shape with a jigsaw, leaving a margin of a couple of millimetres all round, and angling the blade to give a slight slope. Top and edges were sanded. The shape was glued in position on the seascape base, clamping until dry. The glue was spread carefully to seal the whole join, to minimise the chances of resin seeping in.

Temporarily fitting the electrics module in the model, I marked out the cut-out required to access the electrics module from underneath the finished base. I taped and clamped the upper and lower parts. Concerned about cutting close to the edge with the jigsaw, I drilled 8mm holes in the corners of the shape at its broadest.

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I cut out the access hole for the electrics module with the jigsaw, and a parallel guide for the long sides, cutting through all four layers of MDF at once. I tidied up some uneven surfaces with a chisel, though that caused some breakthrough damage on the underside: memo to self, don't chisel towards a finished surface. I glued the damaged areas and clamped them flat. The sides of the hole were sanded. The hole needed to be enlarged further, in the lower section only, to accommodate the battery holder, so I did that with the jigsaw.

The apertures for the switches were cut out with a hacksaw and chisel. The channels for the wires were cut with the Dremel in a router mount. Both parts of the base were then sealed with an MDF sealant, applying two coats, apart from the faces that will be glued together. Particular attention was paid to the top, which will have resin poured over it, so a good seal is essential.

When dry, the sealant seemed to have raised the grain (if there is such a thing in MDF) on the long cut edges of the main board, so I sanded and re-coated all the sides. Then primed the sides and top with white MDF primer.

The top part of the base was sprayed with the airbrush: black for the ship plinth, Dark Mediterranean Blue for the sea, and Glossy Sea Blue for the transition. It was then covered in two coats of gloss varnish[48], or matt varnish for the plinth. I sprayed the lower base with a slate grey satin spray can[49], sanding back once between coats. After about four coats, the finish was acceptable, although not entirely smooth on close inspection.

I ordered a litre of epoxy resin and some alcohol-based ink for colouring it. [50]

The strips of wood I bought to make the casting dam were

[48] Winsor & Newton Galeria Gloos/Matt Varnish

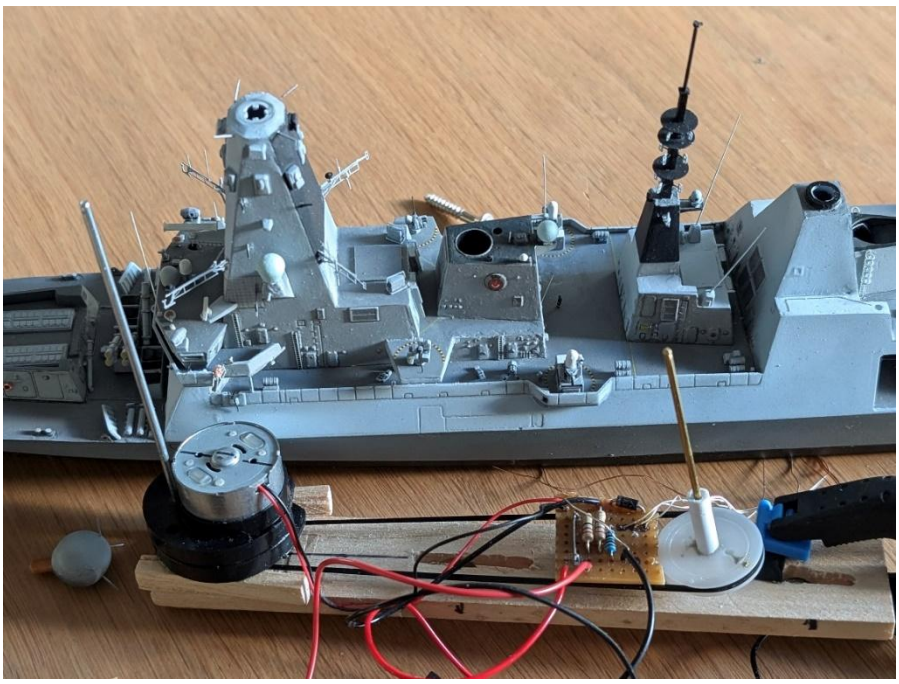
[49] Jenolite Directorust Spray Paint Satin Finish, Slate Grey, from Amazon.

[50] ABEIER Epoxy Resin Kit, 32oz/946ml, and DecoRom Alcohol Ink Set - 12 Vibrant Colours, both from Amazon.

covered in packing tape. I found the tape surprisingly easy to work with. It was easy to smooth out wrinkles and bubbles to get a smooth surface. Unfortunately I ordered all my pieces of timber 6mm too short so they won't go all the way round, but I fixed them into two L shapes with wood glue and tape.

Fitting the electrics

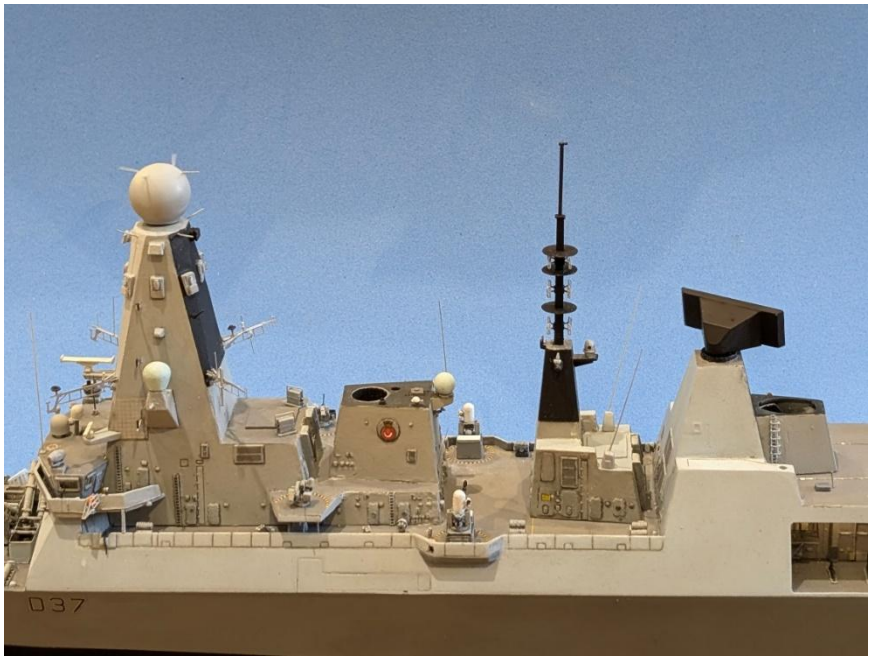
I found that some rough handling (letting the batteries hang from the wires) had resulted in broken wires at joints, so I did some re-soldering. Having mended and tested the circuits, I soldered the lighting wires to the board, and the returns to the light switch lead. All working at this point. I glued the circuit board to the block of wood I added earlier to hold it above the drive belt, using white glue.



I then had terrible trouble installing the electrics module into the model. The problem was that the aft drive shaft does not present neatly in the middle of the hole at the top; it wants to spring forward. So the radar scanner cannot be pushed straight down onto it. I tried fitting the aft shaft first, then marrying it to the module. But with the circuit board in place, it was impossible to hook and fit the drive belt to the aft shaft wheel.

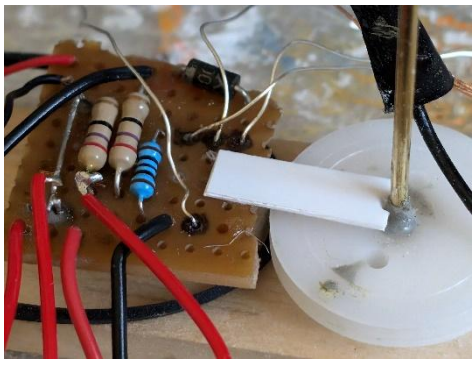
My solution was to fix a larger piece of flexible tube to the bottom of the aft scanner tube using glue and tape. The larger tube can be located over, and guide, the top of the drive shaft. This worked well at first and I got it all installed, but the rotation was unreliable, and seemed to be snagging. Moving the module even slightly could stop the rotation entirely. I disassembled it; in

the process the tube extension came off, and had to be retrieved from inside the mast and refixed. The motor gearbox came apart. I may have to take one of the resistors out of circuit to give it more oomph, but I am resisting. I fixed a long jump wire across one of the resistors that I can access without removing the unit, so I could cut it or add lesser resistance without removing the module.



After a lot of messing about, I got the electrics installed and radars working. With the jump wire in place the scanners were turning at double the required speed, so I cut the jump wire but left it accessible. That gave the correct speed, although the aft scanner seemed a little hesitant. Loosening the fixing screws helped, so the holes/slots must be slightly out of the perfect alignment.

Unfortunately, the radars still did not run reliably. The aft scanner kept catching or stopping. So I removed the whole unit again and did further work. I eventually concluded that the problem is probably the tension put on the aft drive shaft by the belt, which strongly pulls it forward and causes it to slope. I opened up the shaft hole further with a round diamond file, in case the shaft is binding on the sides. I removed the sleeve designed to prevent the shaft coming out of the lower socket, as it shows no sign of coming out, and that could also be a source of friction. I added a small plastic brace glued to the circuit board to prevent the shaft sloping forward under the belt tension, which I hope will help and if nothing else, should centre



the shaft and make it easier to fit the scanner on the top, whilst not adding significant friction. I also filed back the stubs around the forward, Sampson scanner at an angle to reduce friction against the tube, and finally added more silicone lubricant. All set – and a wire broke! Unglue the circuit board, re-solder on the battery wire, test, glue back on … Still not working. Found a bad soldered joint on the battery cap, fixed. Erected a plastic card wall next to the wheel to prevent the loose lighting wires binding on the wheel or belt. Eventually got it all working, but not consistently. It runs better when the screws are not tightened and the electrics hang below the model, so something is pressing when it is tight. Fortunately, with the design of the slot in the model base, there is no need for the weight of the model to rest on the electrics module, so I can leave it loose. There is light leakage all around the bridge, which I had hoped I had averted, so I should do something about that – not easy at this stage.

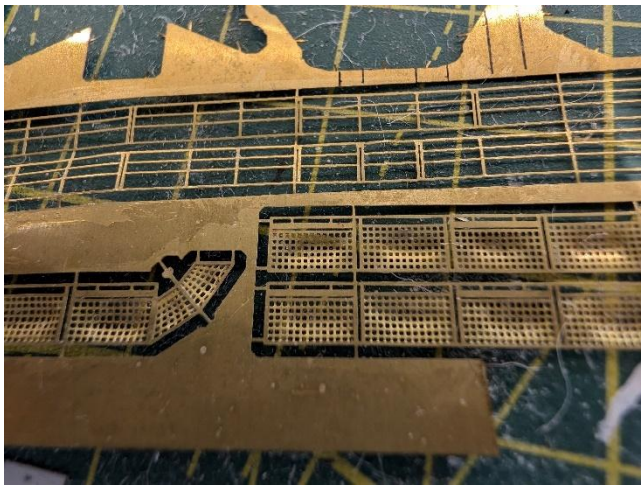
All the handling of the model during the electrical fit-out necessitated some repairs (including to some older issues). I carefully bent the lightning conductors back into position with pliers. I found that the hangar roof hatch had lost its handwheel and securing post, so I replaced them. I did some minor paint touch-ups on the weather decks, with trepidation in view of my colour-matching problems. The tall antenna from the starboard yardarm was found on the bridge roof, so it was glued back in place. A minigun and a GPMG shield were fixed back in place, along with both flight deck GPMGs. The dislodged mezzanine railing inside the hangar was glued back. I used an eyelash brush taped to brass rod to paint the scar in back wall of the hangar left by the drill. With some difficulty I corrected a colour match problem on the aft side of the forward funnel.

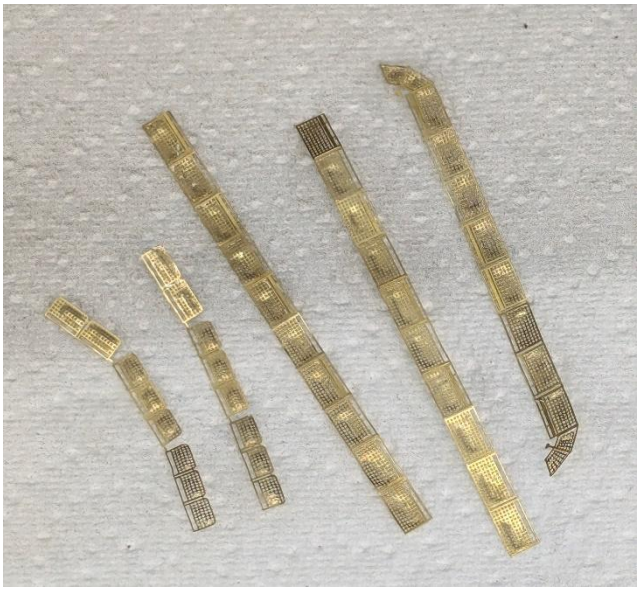
Railings

The railings had already been primed on the fret with VMS Metal Prep. I used a round-headed metal tool[51] to press a sag into the netting railings that will be mounted horizontally, pressing into a cutting mat. It worked well, though I am not sure the sag will be noticeable. I later added to it, rolling the tool along the longer parts to get a consistent sag.

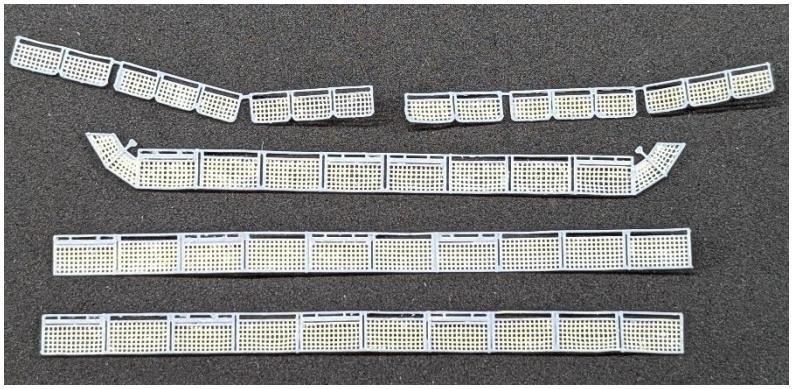
[51] Sold as “dotting tools” for nail art and clay sculpting.

Spraying with white Vallejo primer revealed many blockages in holes in the PE netting, probably caused by the VMS Metal Prep. I spent a happy hour or more stabbing the nets with a sewing needle to open these apertures. I then airbrushed on a 1:3 mix of Portland Stone and white for the netting.





Disappointingly, although the paint was thinned and applied lightly, this again closed many of the holes, and even the needle technique didn't seem to clear them completely; also, bright brass spots became visible, so repainting was going to be necessary. I decided to strip the netting parts back to bare metal by soaking them in VMS Clean Slate; I first removed the parts from the fret and cleaned them up with a file. Soaking and brushing away the resulting gloop cleaned up the parts nicely. I washed them in warm water with detergent. I left off the VMS Metal Prep this time and went straight to Vallejo Surface Primer, spraying lightly from a distance in the hope of not clogging the holes again. This despite my experience that Vallejo primer easily peels off metal, so I will have to handle carefully. After 24 hours to dry, I resprayed the colour. Despite my best efforts at light coats, I had to resort to the sewing needle to clear netting holes both after primer and after paint, in the later case while I still had paint in the airbrush



to repaint any scratches through to the brass.

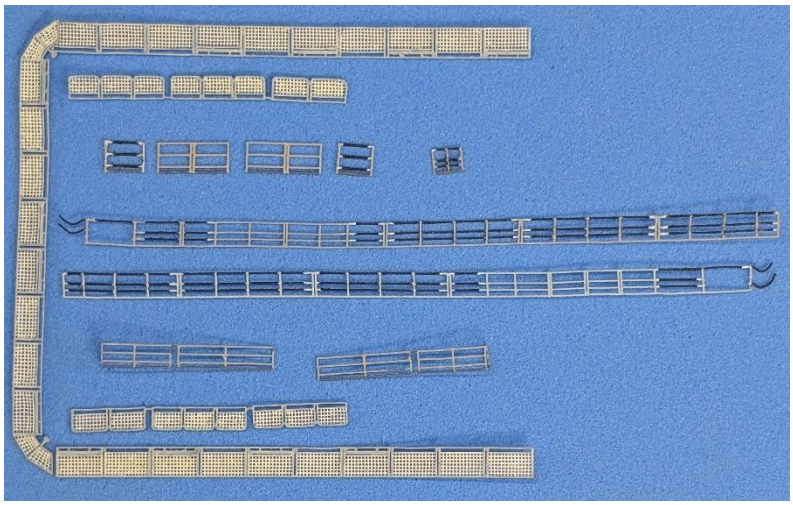
The frames and stanchions were then painted in 2:1 Wolf Grey and Sky Grey with a 000 brush. I had to mix some netting colour for touch-ups, and to use the needle again, but a very pleasing result. The holes clog very easily and, as I feared, the primer peels off at the slightest scratch.

The railings seem to be of three kinds: the netting ones, above; solid metal horizontal bars, permanently fixed; and tensioned wires between stanchions, tensioned in groups of four by bright metal tensioners at each end, which are longer at the aft end. The wires can be removed, eg to allow the forward decoy launchers to fire. On the foredeck starboard side, the only solid rails are a group of four sections: from the bow, there are 3x4 wire sections (the first section short), then a single wire section with its own tensioners, then four solid sections, then three wire sections over the fairleads, then chains to the bulkhead. On the port side, where the extra fairlead is missing, there are five solid sections followed by two of wires. Railings on the missile silo and walkway behind the 30mm guns are solid, with chains for ladder spaces. The small balcony seems to have wire rails. On the flight deck there are two solid fixed sections abaft the GPMG positions and a wire section in front of the life rafts. All the railings lean inwards slightly.

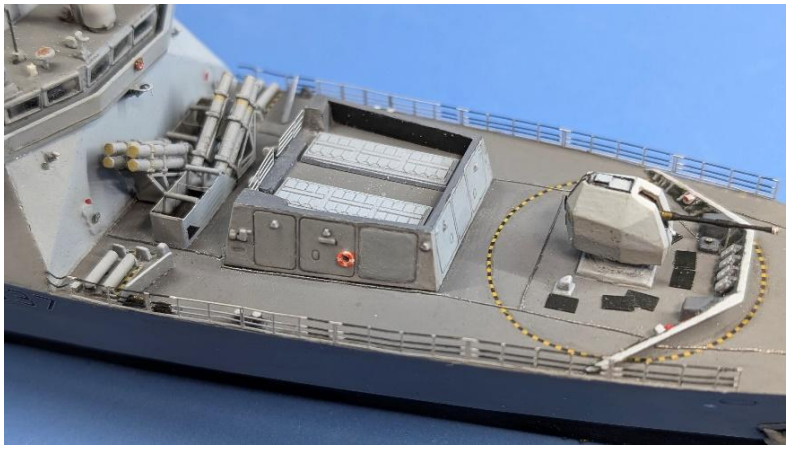
I painted the railings on the fret by airbrush, initially Sky Grey, then, for those in the light on one side, Wolf Grey on one side only. One part I painted in the wrong colours on the two sides, later resprayed. I test fitted all the railings and they all seem to go on well, apart from the small balcony, which is far too small for the PE railing assigned to it. I improvised this one, using a railing part from the Atlantic etch and a scrap of brass to make an extra stanchion. It is easy to get all the railings the wrong way up; ascertained from photos that the smallest gap goes at the bottom. The aftward ends of the foredeck rails were bent to represent sagging chains connected to the bulkhead.

I glued the missile silo railings in place, just because I could. The two halves needed to be separated.

The remaining details on the other railings were hand painted. The bottom “rail” should not really exist, so I painted it deck colour, except on the foredeck: a narrow strip of hull colour runs around the foredeck, so the bottom piece does not look wrong there. Should I try to paint this strip all the way



round? The wire tensioners were added in Aluminium[52], then the wires painted in Tyre Black. After some back-and-forth touching up, including more stabbing with the needle to open netting holes, the railings were ready to instal.



The foredeck railings were glued in place. I ran a wire loaded with VMS Slow CA along the bottom edge and put it in place, with accelerator at hand to lock sections as they were fully positioned, dabbed on with a brush. This didn't work quite as well as I hoped, but I got it in place on both sides. In the process I knocked over the accelerator bottle, all over the waiting railing parts, but did no damage.

The midships fixed railings were also glued on. It's annoying that on the starboard side, the gap in the railings doesn't match the position of the ladder.

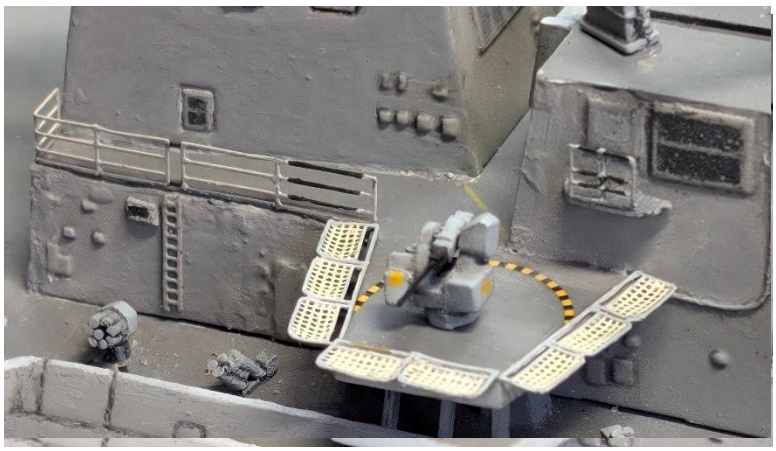
All the kit details on that bulkhead are too far forward, and the ventilator just abaft the gun platform far too small; the ladder should actually be where the railing gap is, athwart the decoy

[52] My first purchase of AK 3rd Generation paint, instead of Vallejo.

launcher. I decided to move the ladder and the rectangular feature to the left of it, leaving the other details where they are: I can't do anything about the door and large ventilator at this point. I scraped the ladder off and filled the existing rectangle with Perfect Plastic Putty, needing several attempts before the original details could not be seen beneath a coat of paint. The surface was left very rough, as it was impossible to sand effectively in this small space, surrounded by delicate antennas, so I gave it a coat of Mr Aqueous Surfacer 1000, which helped.

The small rectangle should actually be another ventilator, with a dark centre. I used a scrap of styrene to represent this. It was glued on, along with the ladder in its new position.

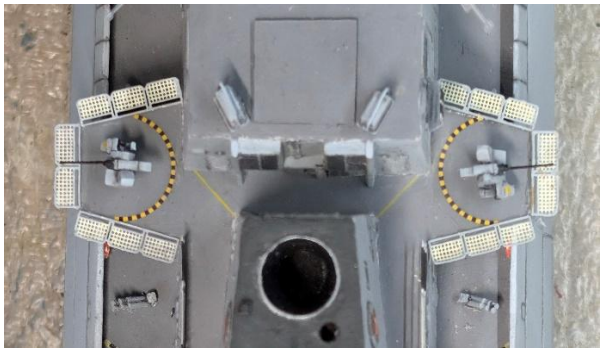
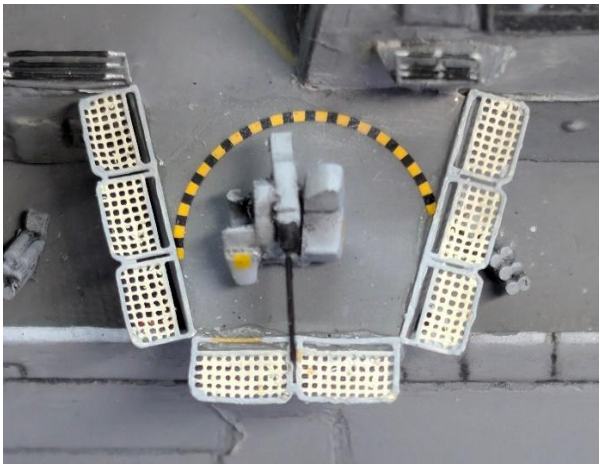
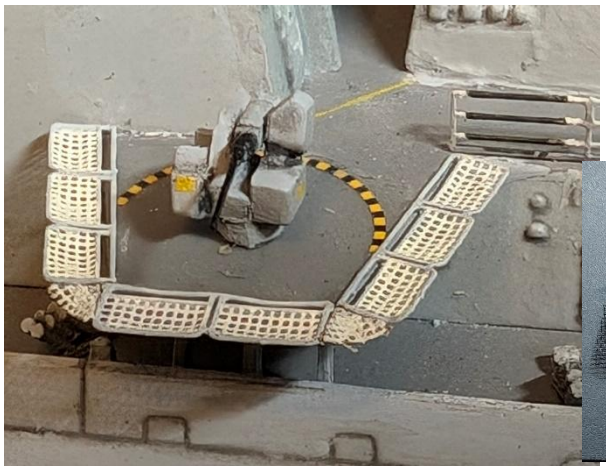
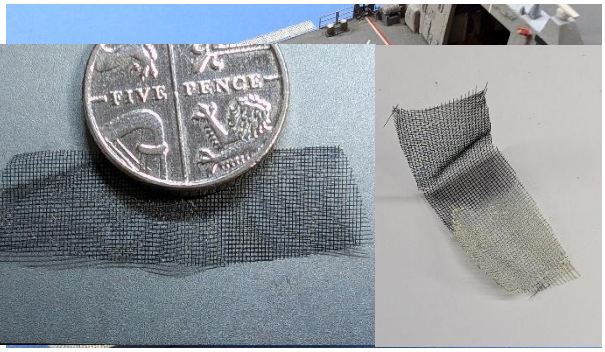
Looking at the photos I also realised, belatedly, that the forward section of the four-section rail athwart the funnel is a tensioned wire section, not solid bar. I repainted it accordingly with Aluminium and Tyre Black.



The remaining rails were glued in place. I had some difficulty getting the glue to stick, even dabbing on CA accelerator – I may have an old bottle of VMS Flexi CA. There is some surplus glue showing, especially on one of the SCG platforms. I used a mesh part from the Atlantic Sea Ceptor set to cut four triangles, and pressed a tool into them to create sag. These became the nets across the corners of the SCG platforms.

October 2024

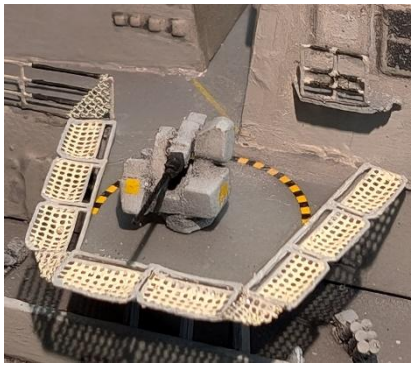
Don't tell anyone, but the line of netting along the port side of the flight deck is upside down, ie should be flipped over lengthways. The four sections with double bars at the bottom should be at the after end. I only noticed this when fitting and later looking at reference pictures. It's too difficult to fix now. To correct it would mean reversing the direction of the sag pressed into the nets, and thus repainting…

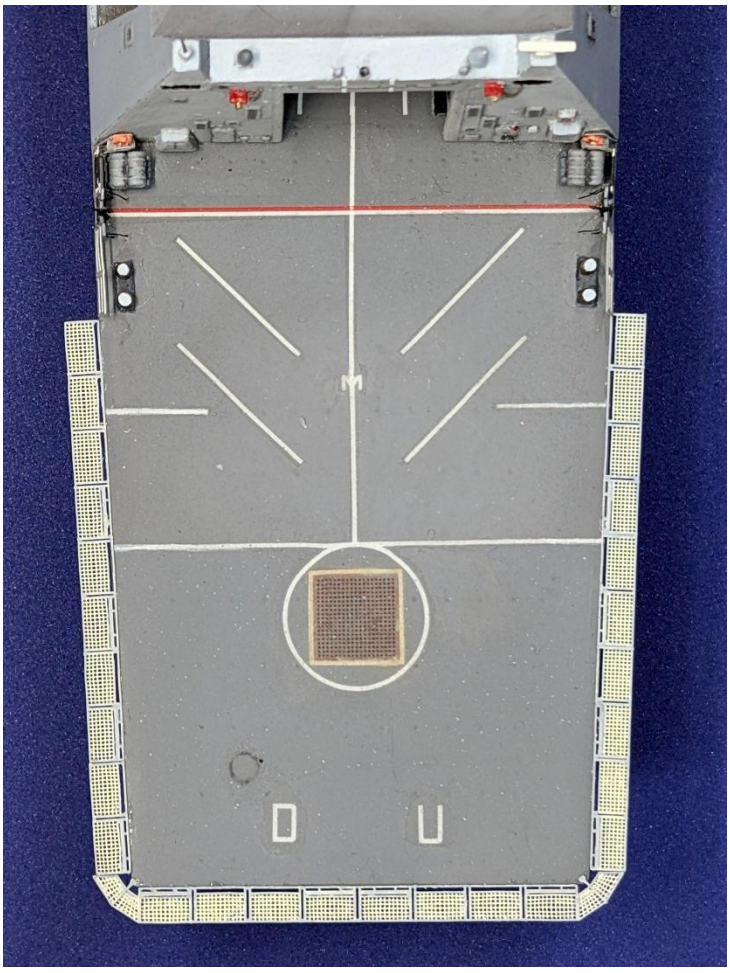
Who am I kidding? Of course I was always going to correct it. I managed to remove the offending part quite easily, and to remove most of the glue, without major damage to the deck. I pressed the mesh the other way with the rounded tool. I was relieved that this did not seem to damage the paintwork, though it did seem to fill many of the holes. The sewing needle came out again, but by the time I had reopened all the holes, I had also damaged the paint. Of course the frame also needed painting where it had been glued to the deck, and I had not given as much care to the precision on what had previously been the underside. By the time I finished with the needle, the paint was flaking off, and I decided to strip it all off again with VMS Clean Slate 2 and re-do it.

Today, 2nd October 2024, the UK Defence Secretary visited HMS Duncan in Limassol, Cyprus, where she is undergoing maintenance. She was not active as Iranian missiles fell on Israel last night but is standing by to help evacuate civilians from Lebanon. She has been in the Eastern Mediterranean since May but has apparently not deployed to the Red Sea as intended.

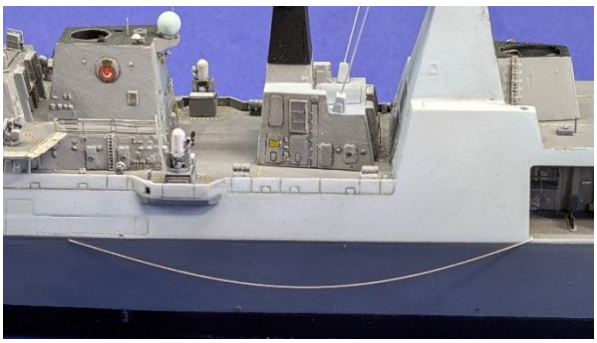
I used a fine plastic mesh, cut from the bag a cosmetic product came in, to make the small pieces of net that join the folding horizontal net to the vertical stanchion of the fixed rail on the gun platforms. In retrospect, I wish I had looked for and found this fine mesh earlier: it would have been better to cut out the brass mesh and use the plastic net instead. The brass mesh is far too prominent, especially painted such a light colour. The nets are barely visible on the real ship.

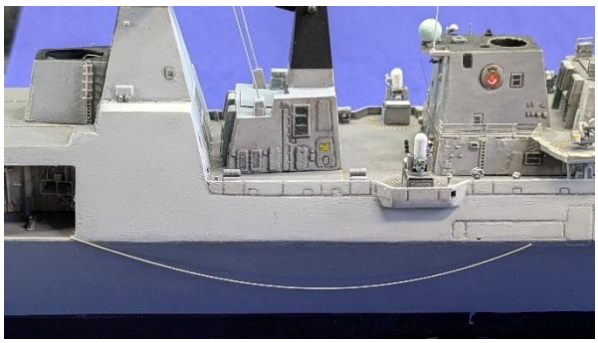


Two sections of the removed rail broke off in the process of stripping it, due to excessive bending. I re-did the sag to improve it, and straightened the sides, squeezing the long edges in the PE bender to flatten them. I primed in Vallejo White Surface Primer and then painted in the 1:3 Portland Stone and White mix, both by airbrush, taking care to apply thin coats. At the same time, I sprayed some pre-primed 0.2mm brass rod: two 1.5cm lengths for the cordon ropes that join the rail to the breakwater, and two 12cm lengths for the safety ropes drooping either side of the ship. In both cases they will be trimmed to fit. A thin scrap of brass was bent and painted Tyre Black ready to replace one of the safety chains on the foredeck, where one of railings ends did not quite meet the bulkhead. I noticed that the forward end of the port railing on the foredeck was not quite straight, so ended up detaching it for about four sections. There was some ugly glue residue behind it, which I cleaned up with knife.

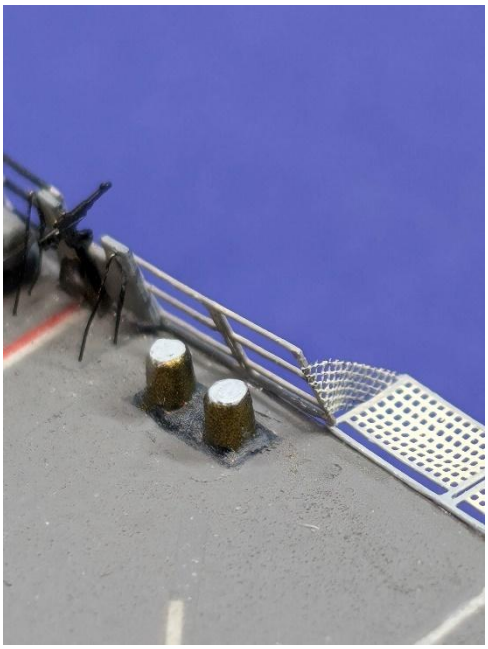


I painted the damaged deck edge, both here and on the flight deck. The rail was glued back in place.



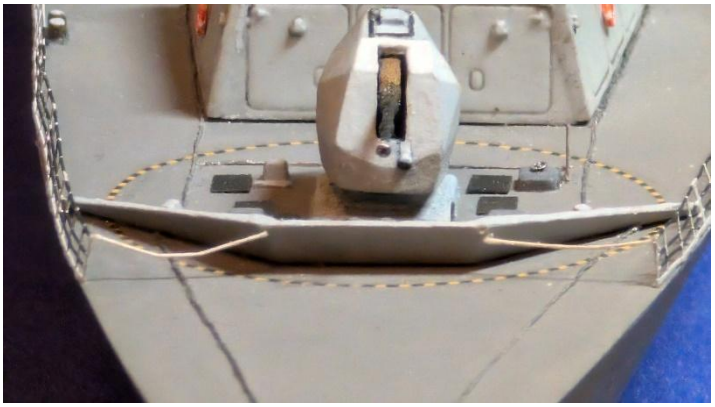


The stanchions and netting frames were again painted 2:1 Wolf Grey and Sky Grey by brush, and the re-done railing and net section was glued back on the flight deck. I later added two more triangles of netting across the join of the mesh with the fixed railings.



The two short sections of 0.2mm rod, painted earlier, were glued to the angle of the breakwater, the intention being that once firmly fixed, they could be bent into the necessary curve and glued to the end stanchion of the rail. In fact they were a bit stiff to bend naturally in this position, so I ended up putting in the bend with pliers. Not perfect, but they look OK.

After carefully deciding on the correct position using photos, I drilled 0.3mm holes in the hull for the safety ropes. The 0.2mm brass rods fitted snugly in the holes, so I turned the ends 90 degrees and glued them in. That allowed me to cut the perfect length to give the sag I wanted, to about halfway down the grey-painted hull. The other ends were also bent 90 degrees and glued to the corners of the

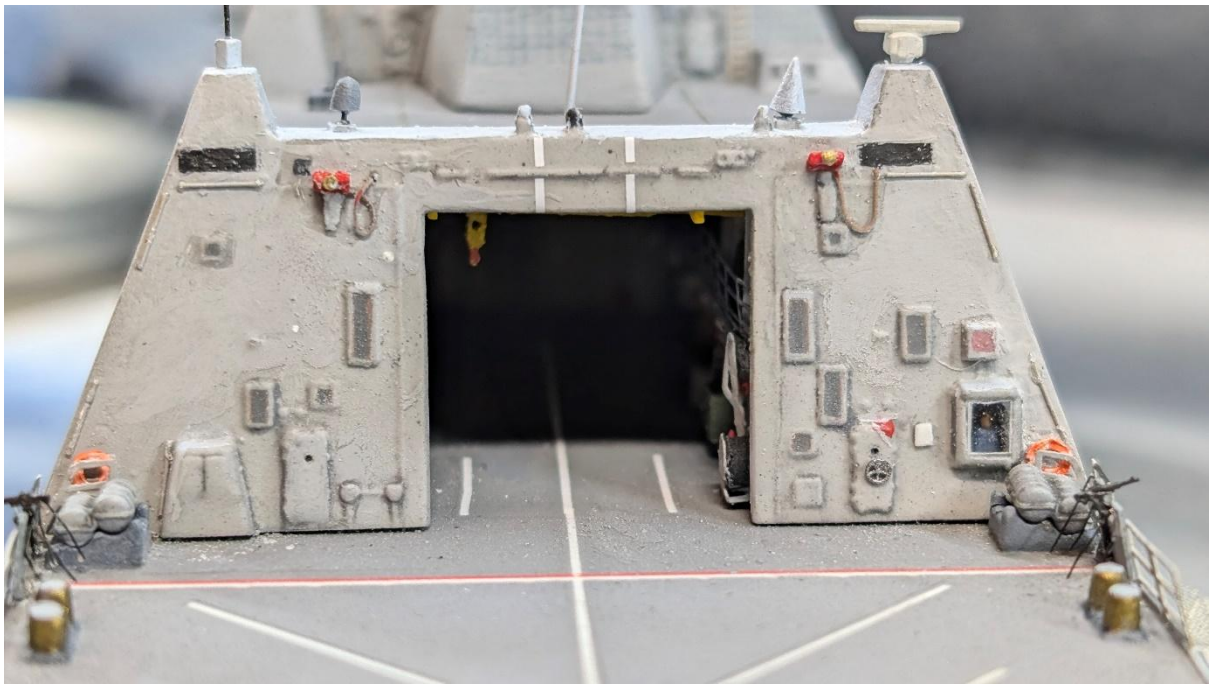


boat bays. On this length of 0.2mm brass rod, the natural curve worked perfectly.

Final adjustments

I started looking around the model close up to find any bits of poor paintwork or damage and touching them up.

I long ago realised that six bars on the hangar bulkhead – two below the black windows and four along the edges – needed adding. The horizontal bars had been removed by sanding and the diagonals on the edges had to go on the corners I added with plastic strip earlier. I cut six 4mm lengths of 0.2mm brass



rod and painted them Sky Grey, then stuck them in place using a chinagraph pencil to grip them while I applied a tiny dab of Mig Ultra Glue to each end, then put them in place. Very pleased with the result.

The protruding tops of ladders were bent back straight, after regularly being caught by hands and tools during the build. One of the lower lightning conductors on the foremast was pointing slightly too high, so I gently bent it down – and it snapped off! I managed to fix it back with VMS Flexy CA, but it will now be very delicate.

I got drawn into touching up weather decks again, trying to cover glue spots on the port gun platform and flight deck. Always dangerous because I can't get a colour match, and the paint dries much darker than it appears off the brush. Adding a tiny drop of Panzer Dark Grey to the Medium Sea Grey got me close. I made the mistake of touching up around the D on the flight deck. Probably the most prominent location on the ship and I had to make multiple attempts to get a colour match. Eventually a touch of black in the Medium Sea Grey gave a match, although the new paint looks shinier. I hope it will be invisible once varnished.

One small ventilator on the aft mast needed a pinwash, so I experimented with using Vallejo Flow Improver with a hint of Panzer Dark Grey. It didn't really work as a pinwash, but it gave the shadow and I was able to tidy up with the base colour.

Figures

I concluded some time ago that the uniforms of the crew figures I painted before (in Dark Mediterranean Blue) were too light. I sprayed most of the remaining crew figures in the new navy blue[53] I bought from AK 3G. It is actually too dark for the crew working uniforms, especially in this small scale. It is hardly distinguishable from black.

I spent some time experimenting with different paint mixes for crew uniforms. I decided on 10 drops Dark Mediterranean Blue to one of Black. I repainted the dozen or so figures I still had unused from the previous painting batch, just covering the previous blue fairly roughly and trying to avoid the other coloured details, using one of the nail art detail brushes and two pairs of spectacles.

[53] AK11187 Strong Dark Blue

I sprayed the figures remaining on the fret in the blue uniform mix.

I lightened some NATO Green with Light Grey and painted two figures to be pilots, touching in their helmets in neat NATO Green – though the colour difference isn't visible. Three firefighters were done in Iraqi Sand mixed with Burnt Umber. Royal Marines (or naval personnel in camouflage uniforms) were painted first Dark Sand and then stippled with US Desert Sand, not very successfully.

I painted faces and forearms, or hands where there would be full sleeves, including a mix of darker skins. I found Vallejo Basic Skin very light for white skin. I may mix in some brown. I tried to paint as many as possible on the fret, because of easier handling. I also added Insignia White dots to upper left arms to represent the trade patches and two broad white stripes across the chests of boat crews. Eventually I cut all the remaining figures off the fret. Some may need to be reunited with their feet later.

It's amazing how the figures come to life with the addition of three blobs of flesh colour.

I tried to paint the yellow stripes on the firefighters' overalls, using one of the nail art fine brushes. I may have found the limitation of these brushes, because paint would not flow from it when I tried to paint lines. I had to apply pressure, leaving a blob. And the yellow paint is notorious for not covering well, so the result is messy, though probably giving a reasonable impression. I applied a second coat of yellow, this time with a good 000 brush, but it was no easier. I mixed some more base coat and tidied up the lines, which looks much better. Under strong magnification the results are still impressionistic. Yellow helmets were also painted, including cutting the head off another figure to be a helmet on the ground.

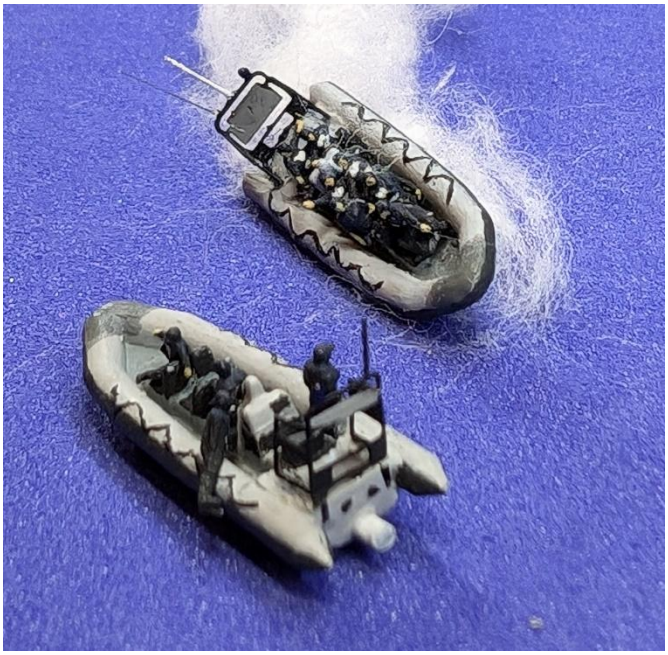
After basic painting, I set about surgery on the boat crew figures. Painting the crews is going to be an iterative process, as each stage may need paint corrections. I worked out where each figure would be in the two boats. On the boat in the boat bay, figures will be standing and dismounting. I cut off limbs that didn't fit or looked wrong. I glued some back on in different orientations, or used scraps of plastic to represent the tops of legs of seated figures. Looking very promising so far. I left them for the Mig Ultra Glue to dry.

I continued painting flesh on other crew figures, using Burnt Umber and Earth for black skin.

Boat crew helmets were painted in AK Strong Dark Blue, and lifejackets in navy blue. Neither really shows against the black outfits! White stripes were recoated or tidied as needed. More flesh was painted, this time using US Dark Sand.

Seven figures for boat bay crew were given coloured helmets in light blue, mid blue and white, copying a reference picture. I did not bother with lifejackets or boots, as they would not be visible.

Hauling in the boats



Time to fix the figures in the boats. The crew figures went in well after all the preparation and look good. Those in the moving boat have dynamic poses. Those in the boat to go in its bay are in various stages of getting in or out. I left a couple of figures unfixed, as they might interfere with installing the boat cradle.

I decided not to fit the grab handles. The PE handles are large and clumsy, and not really the right type: handles are on the backs of the seat in front, or on a post for the front pair. They would hardly be visible and would be difficult to fit around the crew figures.

I made two antennas for the boat in the water: 4mm white 0.2mm brass rod, and 6mm natural 0.1mm nickel rod. They were glued in place with VMS Flexy CA. I don't give them much chance of surviving to the end of the build. The antennas are probably shipped when the boat is taken aboard, so I did not antennas to the second boat, though I left the PE one in place The boats are finished, apart from ensigns.

The onboard boat was slipped into its cradle, and the remaining crew were glued in. I used 0.1mm nickel silver rod, primed in black, for the boat hauling lines. On the boat to go in

the boat bay, this was short length glued to the top of the boat post, passed through the hole in the cradle and glued into the davit arm hole, drilled previously. The davit was glued into its socket in the boat bay, not without difficulty: getting the boat to sit on its supports in the correct position, the davit in its hole on the bulkhead and level, the hauling line vertical and the cradle arms level was extremely tricky, and took several attempts. Mig Ultra Glue was not quite tacky enough to hold everything in place while other bits were adjusted. But I got it done eventually.

The port side davit was also assembled, with a longer length of cable dangling and the cradle arms open. I did not fix it in position, as it is extremely delicate and likely to be damaged in handling.

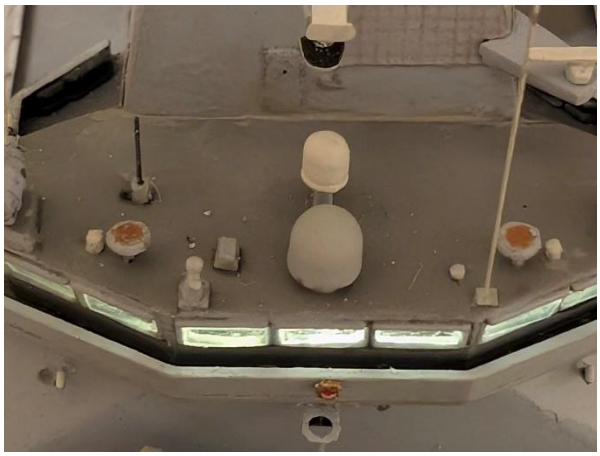
I glued the seven boat bay crewmen in place with superglue. Very pleased with the poses and effect.

I looked at the boat bay railings against reference pictures. The end with three solid bays is forward. I painted the sagging chains in Natural Steel. The top is a solid rail, but the lower horizontals are tensioned wires, which I painted in Panzer Dark Grey. The rails were superglued in place, using a hook tool to pull the tight gains the hull: they go inside the boat bay aperture, and are close to vertical, so do not conform to the slope of the ship's side.

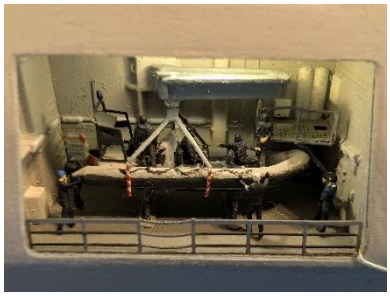
Boat bays complete, apart from fixing the port davit in due course.

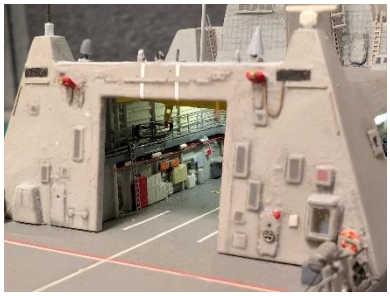
More final touches

I tackled a job I had been dreading: stopping the light leakage around the joins of the bridge to the foremast. I had tried to fill these gaps when fitting the bridge, but clearly failed. Light was visible along most of the joint of the roof with the mast, and on both sides in the reflex angle between the door bulkhead and the mast



I mixed Medium Sea Grey paint (the deck colour) and drop of water into a quantity of Perfect Plastic Putty – rather too much paint, by accident. The water give it a smooth, easily spreadable texture. I was able to apply it to the gaps with a spatula or cocktail stick and remove the surplus with a knife blade, then a wet cotton bud,



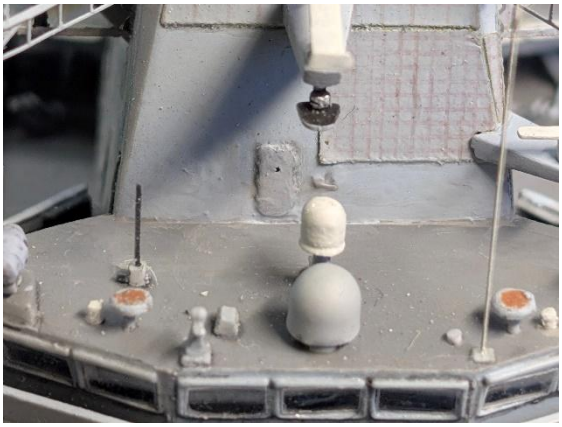


drying up with a damp cotton bud. This went really well, for a change, and I don't think I have got any serious staining on the deck or bulkhead, nor damage to the delicate equipment around the bridge roof. In fact, the join looks much better filled and I had to resist temptation to fill other gaps. I hope the paint, when dry, will more or less match the weather deck. Tested the light leakage by turning off the desk lights. This gave me an excuse also to photograph the boat bay and hangar interior with the lights on.

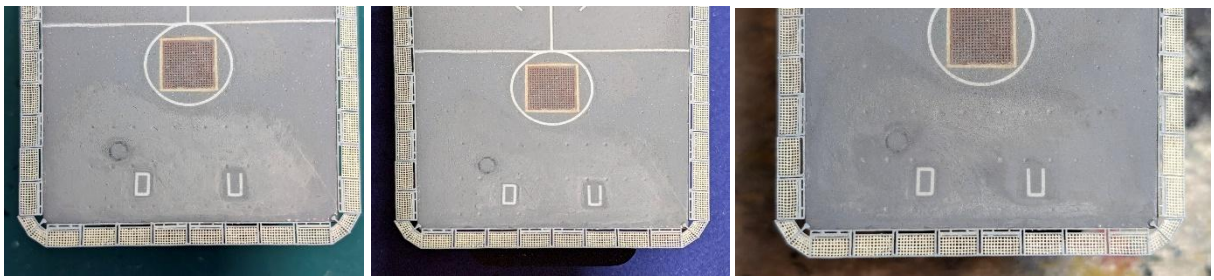
Reader, by now you will know that I cannot resist temptation to make risky improvements. That gap between the hangar bulkhead and the deck is just not acceptable to my critical eye, and, full of confidence from the previous gap

filling, I mixed up more Perfect Plastic Putty, paint and water and filled it. I made three passes at it, each time using sculpting tools to apply the filler and cotton buds to clean up. I think there is still an overhang, but the join is much improved. A light-coloured line was left on the deck close to the filler, and whilst it was artistically quite pleasing, I decided it was too obviously a filler halo and had to be repainted. I did that as part of my continuing battle with the colour of the flight deck, below. I also touched up the bulkhead in Sky Grey, including repainting the dark grey join of the locker doors.

Looking again at the bridge roof joint, I saw that the filler had dried quite a light grey, and the surfaces either side were dirtied. So I cut in the paint either side with the appropriate colours for the roof and foremast using a fine brush, avoiding all the surrounding antennas.



I had been reasonably satisfied with the paint finish on the flight deck, but it was not perfect and I stupidly had another go, and made it worse. I could not seem to match it again. Eventually I made a wash from Medium Sea Grey, a touch of black, Vallejo Flat Base, flow improver and airbrush thinner. The thinking was to blend in edges and make the difference disappear. That didn't

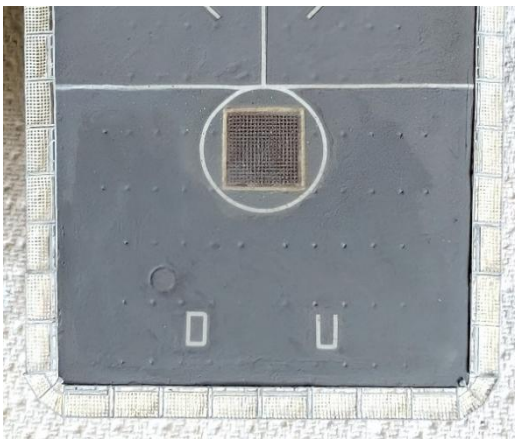


work well either. At each application, the area affected expands. I repainted again with the grey darkened with Panzer Dark Grey, which looked better.

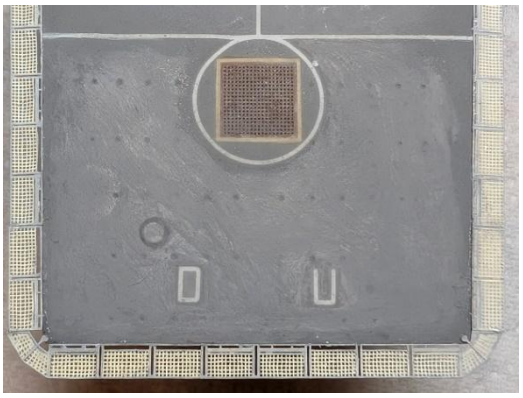
I wet sanded with 2500 grit glasspaper. That was definitely an improvement: it blended in edges of the greys and, importantly, removed the visible rectangle around the letter U. Another attempt at repainting, using a bit more Panzer Dark Grey and small drop of Matt Base, was not too bad, but this time there was bit too much dark grey in the mixture, and the new paint came out slightly darker than the original. I tried wet sanding it, but somehow that seemed to make it worse, bringing out the contrast rather than blending it.

Two more attempts, using Medium Sea Grey with touch of Panzer Dark Grey, a small amount of Flat Base and an even smaller amount of retarder. I tried to paint thin, fairly dry coats, almost drybrushing. The first attempt failed, tough not be too much: there was a distinct contrast and because I have not painted all the way to the edges, the new paint showed up. I also attempted a coat with too much water, which dried unevenly.

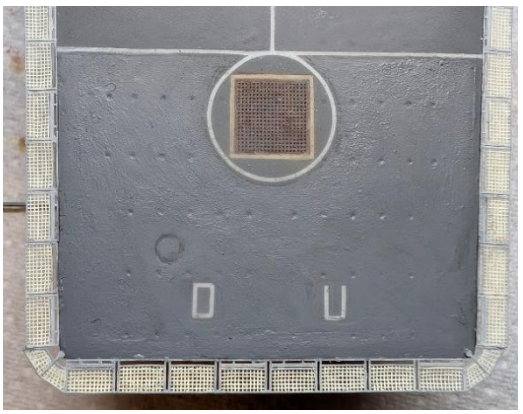
The next coat is an improvement. I hope it will dry flat and even. It was applied slightly wetter and more comprehensively, working it quite hard to attempt even coverage. I added a touch of flow improver in this coat.



After a final wet sand, a dark patch nearly caused me to apply yet another coat. I had mixed the paint when I realised that the dark patch was drying from the wet sanding, and the surface was as good as I could hope for. I used the paint to touch in round the edges, especially the remining light strip below the hangar bulkhead. I also touched in some other deck spots around the ship, but tried to confine myself to very small patches where any colour difference would not be prominent.



A scratch had appeared down to the brass on the netting frame on the port side of the flight deck, so I mixed the colour and touched it in.



I spent a long time trying to choose the material to use for rigging. I had bought Uschi superfine (0.01mm) elastic rigging, but it will be almost invisible, and I doubt it will support the flags without distorting. I had considered using my 0.1mm nickel silver rod, which is strong and curves naturally; but I concluded that it would look too thick. I really need something

around 0.03 to 0.05mm. I ordered some 0.03mm and 0.04mm wire, very cheaply from China through Amazon[54].

Only at this point, watching TV documentary, did I realise that I have put the white patches on the crew arms on the wrong arm: they should be on the right arm, with a smaller White Ensign on the left (which I am ignoring). I can't change the figures already installed.

Helicopter

I got out the two Wildcat models and studied them carefully against photographs. I had already decided that I prefer the Dorset Print Man fuselage, but I realised that the Atlantic Models tail boom is much better. The Wildcat has a chunky, angular tail boom. The DPM model has a spindly tail boom, much like the Lynx, and a thick fin with no starboard gearbox projection. I cut off the tail booms of both models and exchanged them.

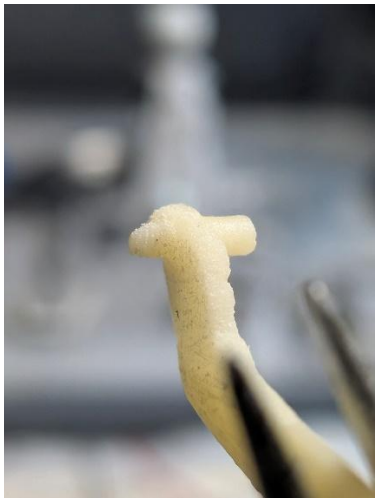
November 2024

Now that I am retired, progress should be a bit more rapid.

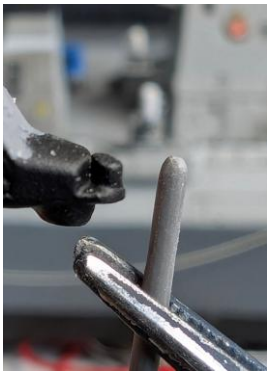
Before fixing, I cleaned up the new tail boom and sanded and scraped it to emphasise the sharp angles. I thinned the fin and shaped the tail rotor gearbox into more of the cone shape of the real thing, trying to capture the angles at the base of the fin and the distinctive kink in its leading edge. The main tool used was one of the tiny diamond files I bought a while ago.

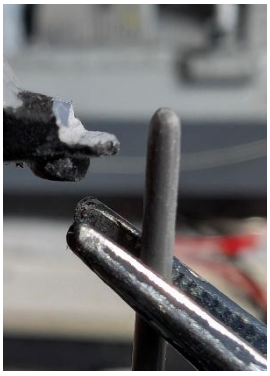
I used a piece of styrene rod to sand into a dome shape to be the FLIR camera ball on the nose, to replace the vague cylinder on the model. I went to cut off the original with sprue cutters, forgetting that

[54] 100m Alloy Molybdenum Wire Cutting Line 0.03mm/0.04mm



I was now dealing with the hard resin of the 3D print and not the soft resin of the Atlantic Models tail. A sizeable spall of the nose snapped off and was lost. But I took the opportunity to flatten and thin the FLIR platform and file back the nose so I can sculpt a new, better shape in its place. The nose should appear to rest on the platform.

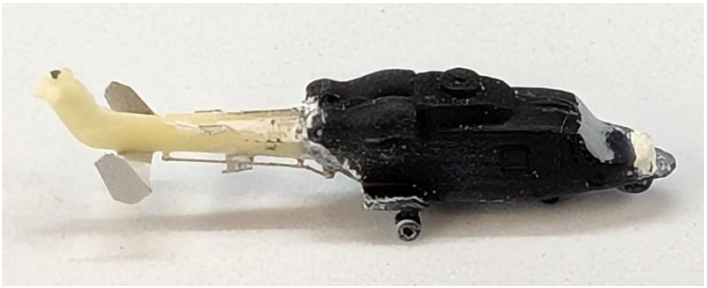


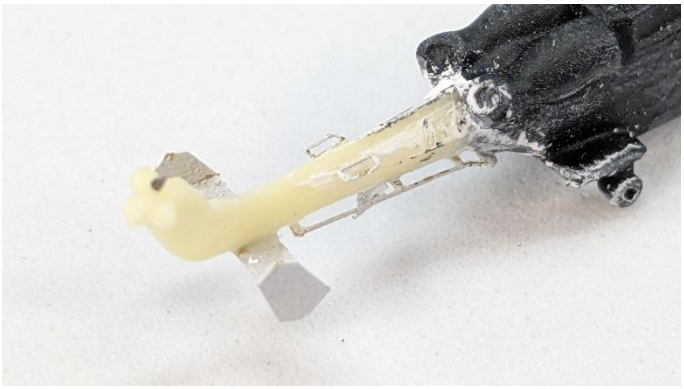


I formed the new nose from white Milliput. It was easy to shape, though it did start to come away as I worked it. I cut two flat faces and pressed a dotting tool into them to create the round depressions seen on the real thing. They are a bit big, but should look good when finished.

The rotor, hub and tailplane parts were cleaned up. Two disks of plastic formed the hub, and I glued the hub arms on top of the rotor. The tailplane fins were superglued to the tailplane, having first squared off the ends of the brass part.

Other photoetch details were added from the Atlantic Models set, using Flexy CA. The rail antenna went on per the instructions, then the tailplane was glued on. Two loop antennas went on the upper tail boom. The two blade antennas under the cabin would have been far too big: they would have touched the deck. Instead, I used the larger one as the blade antenna under the tail boom, which was not in the set, and scraps to make the one under the cabin, just behind the radome. I didn't worry about the other one,





which is hardly visible even in pictures. A tiny piece of wire became the tail light on top of the tail fin. I did not fit the winch above the door.

I ordered new AK 3G paints for the main camouflage colours.[55]

The aircraft was mounted on scrap piece of 1mm brass tube by drilling a hole in the bottom and primed in grey. Inspecting it done in a uniform colour, it was evident that some more work was needed. Most serious, the air intakes are entirely missing in the DPM print. There is flat surface where the fairings should be. They make a smooth transition into the body with a large, round intake hole.

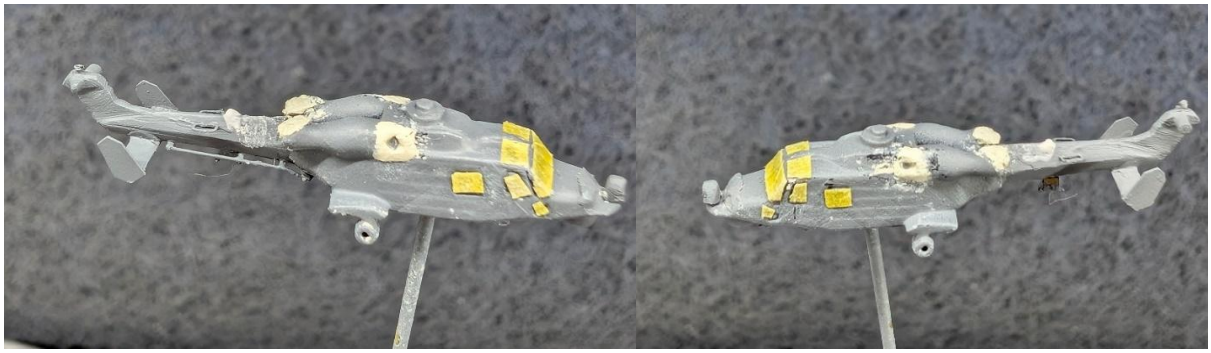
I decided to make masks for all the windows, and to fill the rather crude window engravings on the model. I cut out slivers of masking tape for the windows with a new blade, repeating until I got the right result.

I mixed white Milliput and made the air intakes, carving and smoothing with a wet knife blade, then opening up the hole with cocktail stick. The first one went well. The second, port side, didn't, and took a good number of attempts before getting a less pleasing result.

I also use Milliput to build up the exhausts, which are too angled on the model. The outlets should be near-horizontal. Again, this proved difficult. I started trying to build around 1mm brass tube, but failed. I ended up filling the

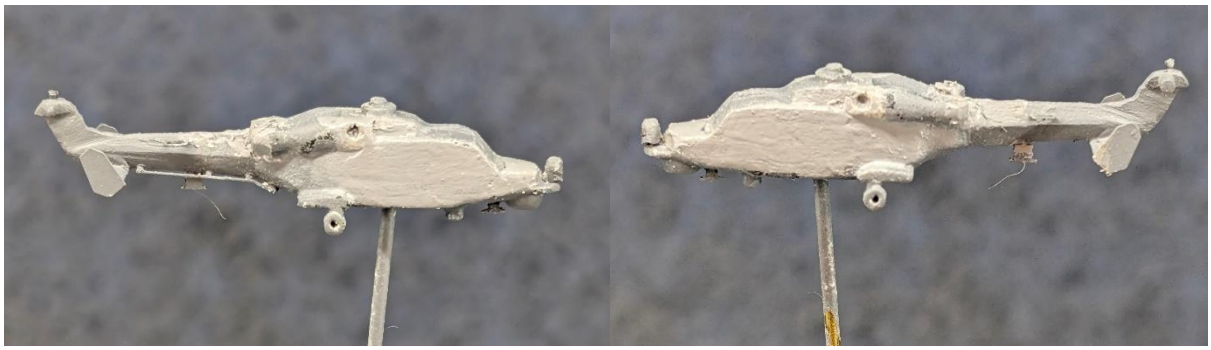
[55] RAF Medium Sea Grey BS381C/637 3rd Gen Aircraft Series AK Interactive AK-11843 and RAF Dark Sea Grey BS381C/638 3rd Gen Aircraft Series AK Interactive AK-11851.

exhausts completely, intending to drill the holes when cured. If it looked worse than the original, I was pretty sure I could break away the hardened Milliput. It certainly looks a mess in magnified in photos. I added the blob on the top of the tail boom with a spot of Perfect Plastic Putty.



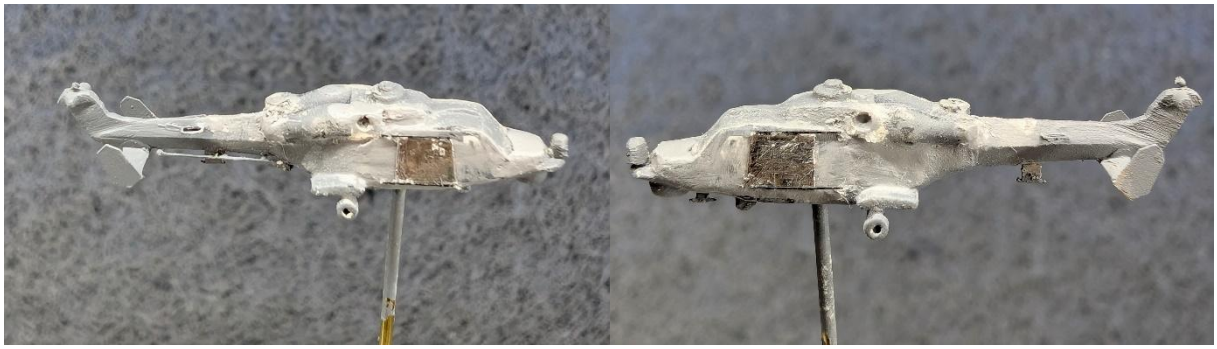
Removing and reserving the masking tape pieces, I filled the window engravings with Perfect Plastic Putty. I also covered the striations on the sides with putty, though I have doubts as to whether the crumbly putty will survive sanding back. I filled some details around the new exhausts and a crack that had appeared at the join of the Milliput nose.

Once the filler had cured, I sanded down with fine sanding sticks (180 and 320 grit). Results looked good. I used a 1mm drill to open up the new exhausts, and also to neaten the round intakes. At first I tried the DSPIAE drill, but its strong twist tended to crack the putty, repaired with superglue. A conventional drill bit was kinder to the putty. Once all cleaned up, a coat of Mr Aqueous Surfacer

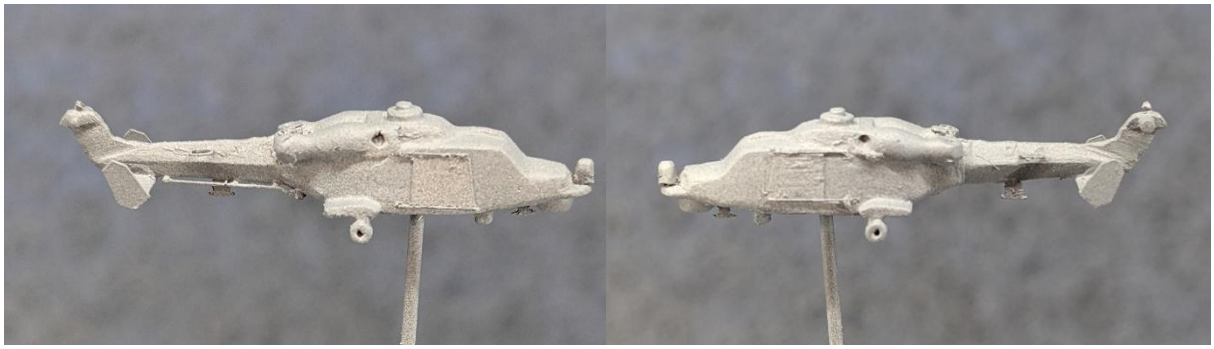


1000 was applied by brush to cover any remining blemishes. It was sanded once dry.

I am going to try making the sliding doors from metallic tape. The width of the door, measured from pictures, appears to be 0.11 times the length the aircraft, giving a door width of 4.1mm. Height is 87% of width giving 3.6mm. I cut the doors from the tape, including the sloped leading edge, and stuck them in place. I had some pre-primed 0.1mm rod to hand, so used it to make upper and lower rails for the door, fixed with Mig Ultra Glue. The Wildcat is now ready for re-priming.

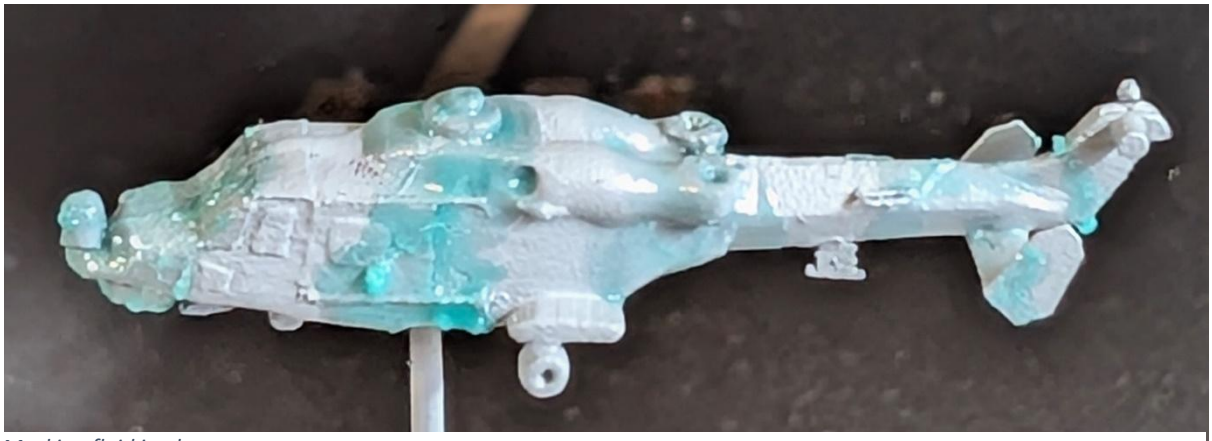


It was again primed in grey, then I painted the window areas in Tyre Black and varnished them with VMS Gloss Varnish HD, to represent the glass. The masks



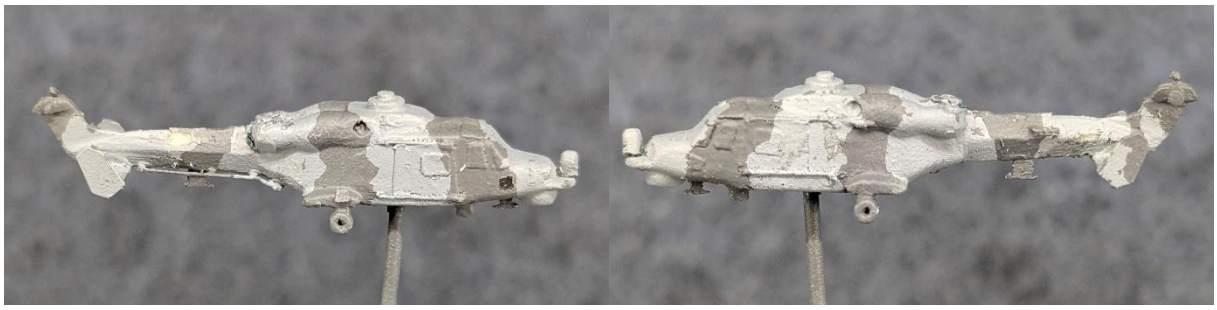
were re-applied, and protected by another coat of varnish, mainly to prevent the paint coat leeching under the masking tape.

The new AK 3G Medium Sea Grey was sprayed on, thinned roughly 50/50 with Vallejo Flow improver, which I have seen recommended for use with this paint. Once cured overnight, I applied Vallejo Liquid Mask in the camouflage pattern, with the computer screen in front of me showing reference pictures. It was immediately apparent that this would be, at best, imperfect, as it was impossible to achieve clean lines at this level of detail: the liquid is too rubbery and starts to dry immediately, especially if applied thinly.



Masking fluid in place

After two hours for the fluid to dry, Dark Sea Grey was sprayed on. Once it had dried for few minutes, the masking was removed. It was quite difficult: once enough had been raised to pull with tweezers, it peeled off satisfyingly. But getting it to lift with a sharp point was difficult without scratching the paint. I tried dabbing with Blu-Tack, and pulled off one of the loop antennas. In a few places I seemed to have missed small patches where dark grey spots would not lift. I am not sure I have found and removed all the making fluid. In a few places the paint peeled, notably on the underside of the tailplane. Nevertheless, it came out better than I dared hope when applying the mask. But I certainly have some corrections to do; it would probably have been better to do the camouflage by brush.

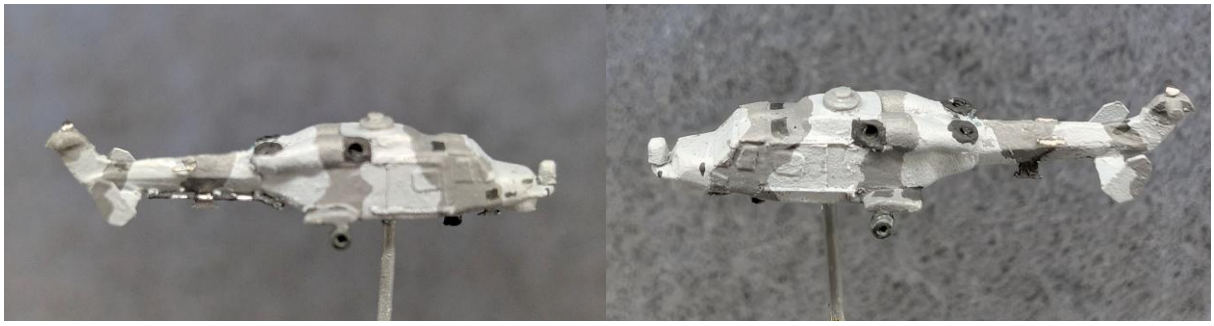


Immediately after removing the masking fluid

Only one small piece of window masking tape came off with the fluid. It will need to be re-covered for now.

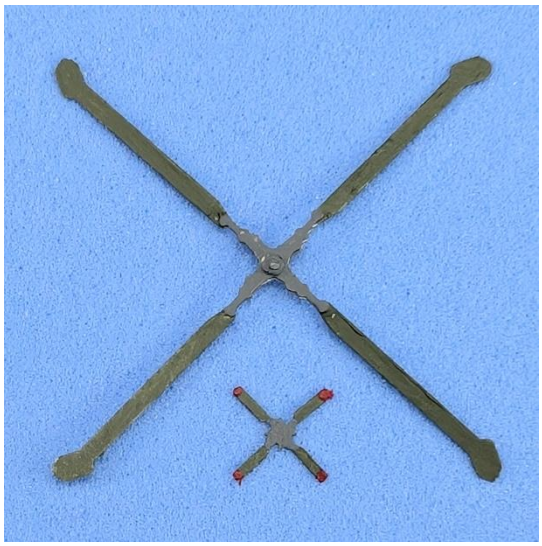
After cleaning up camouflage

The camouflage was tidied up with a fine brush. Only the tail area needed serious reworking. I then painted all the fine details: Black intake and exhaust holes, wheel hubs and sensors on the FLIRS platform edges; NATO Black around the intakes and exhaust rims and for the rod antenna; Tyre Black for wheels; Panzer Dark Grey for the walk areas on the roof and beside the wheel



Finished paint job

nacelles; silver three bands on the rod antenna; silver for the tail light, topped with NATO Black; NATO Green on the rotor blades with Red tips on the tail rotor; and a mixed dark grey for the rotor hub and mechanism, to contrast



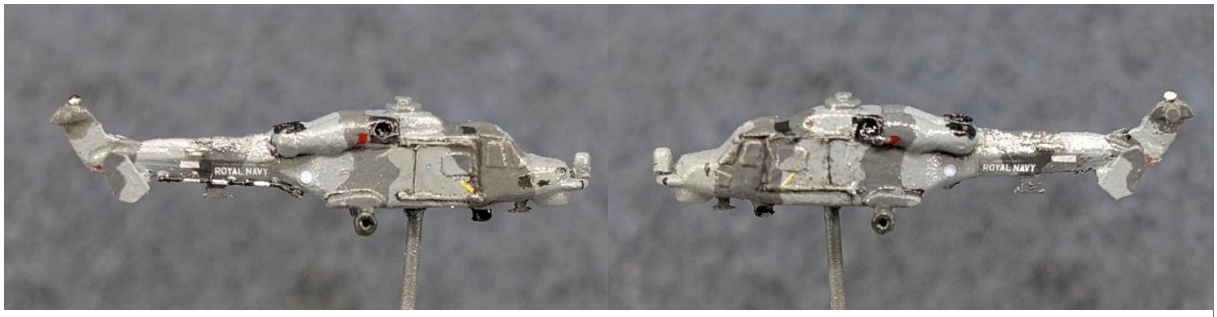
with the camouflage and visually tie rotor and fuselage together. The loop antennas I repainted twice: I used Aluminium and then Silver, but both were far too prominent, so I toned them down with Natural Steel mixed with Silver. A dab of black was added to the back of the wheel supports where there should be a space – the support doesn't go back the full length of the nacelle. After the photos

were taken, I added a square (or splodge) of red to represent the intake just behind the main intakes.

A coat of gloss VMS Varnish HD was applied. I forgot to mask the small, uncovered window!

I then applied the decals. I cut half-width of a spare yellow line decal and used it as the safety arrow on the side doors. The first one went on beautifully and looked great. As ever, the second attempt was disastrous and had to be repeated several times with new slivers of decal. I found that the setting solution was burning through the varnish and paint, so I had to repaint. Only at this point did I realise that I was using Micro Set instead of Micro Sol – I always find the two confusing, especially as the Micro Set has instructions on it for Micro Sol. Eventually I got a satisfactory result, and moved on to position the red rotor Danger, Royal Navy and roundel decals. Not having serial number decals, I decided to place another decal sliver, a plain white bar, where they should be, which I think is marginally better than leaving them off. I might attempt to stipple with grey later.

I pinwashed with AK Wash for Grey Decks, which is nearly black, concentrating on the doors and rails which are the only raised features. I really struggled with the pinwashing, as the wash would not flow along the lines as it should; perhaps the surface is too uneven. I got puddling of the wash. Eventually, after multiple attempts, I succeeded in painting in and removing enough wash to leave a narrow line along each edge. I also applied some wash the rotor hubs. I used a 10/0 spotter brush to apply the wash. For all the detail work I am using a magnifier over +2 reading glasses for extra magnification.



After decals and pinwash

Matt varnish was done at the same time as the ship (below). Once dry, the window masks were removed. On the port side door window, the tape pulled off the paint, so it needed retouching. I am disappointed with the window

Immediately after varnish and removal of masking tape on the windows

contrast, and they seemed to have lost their shine, so I touched in all the windows with gloss varnish. A few touch-up were made with a fine brush (the 10/0 spotter) and I stippled some grey over the plain white bars representing the serial numbers, which I think is an improvement. The rotors were fixed on with Mig Ultra Glue. The Wildcat is done.

Finished: after re-glossing the windows, touch-ups and fixing rotors.

Tying up the ship: to final varnish

The dislodged boat bay railing and hatch fixing post were replaced. I spent an inordinate amount of time making two tiny yellow lanterns to go on the aft life ring ejectors, matching those already fitted to the forward pair.

The extended boat davit arm was fixed in place with CA glue. I replaced a missing ladder.

I dusted the model carefully using air from the airbrush and paint brushes, masked the transparencies with tape, then varnished it

overall with VMS Varnish HD Matt. I put it away in the cabinet, sheltered from

dust.

The purposes of varnishing at this point are:

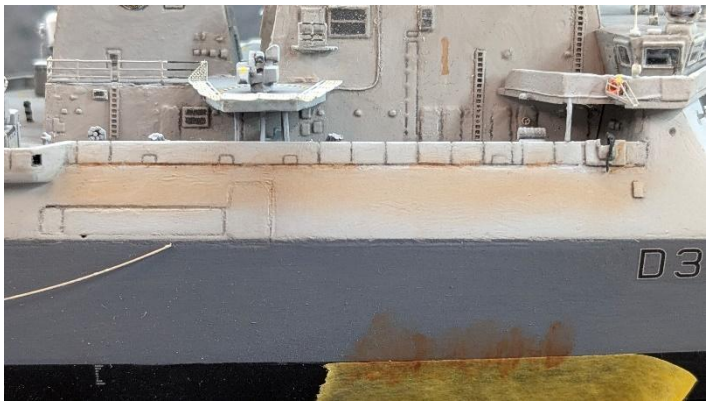
- To hide any remaining shiny spots of glue
- To flatten the shine on the unpainted runs of wire I used for jackstays
- To get the flat black surfaces as matt as possible
- I hope, to further blend the inconsistent paint finishes, especially on the weather decks and lower hull
- To help secure any parts held in place by tiny glue spots, such as yardarm antennas and
- To protect the paint finish, especially against the rust streaks I intend to apply.

Immediately after varnishing, I was shocked to see that all my paint-matching problems on the flight deck had been highlighted, with all the colour variations being highlighted! However, after an hour's drying, these variations had disappeared. The paint finishes must have affected the drying time of the varnish. Overall, it seems the objectives have been achieved, and the overall appearance is certainly better with the matt coat. Though in retrospect, I should have applied a satin coat ahead of the rust pigments.

Rust streaking

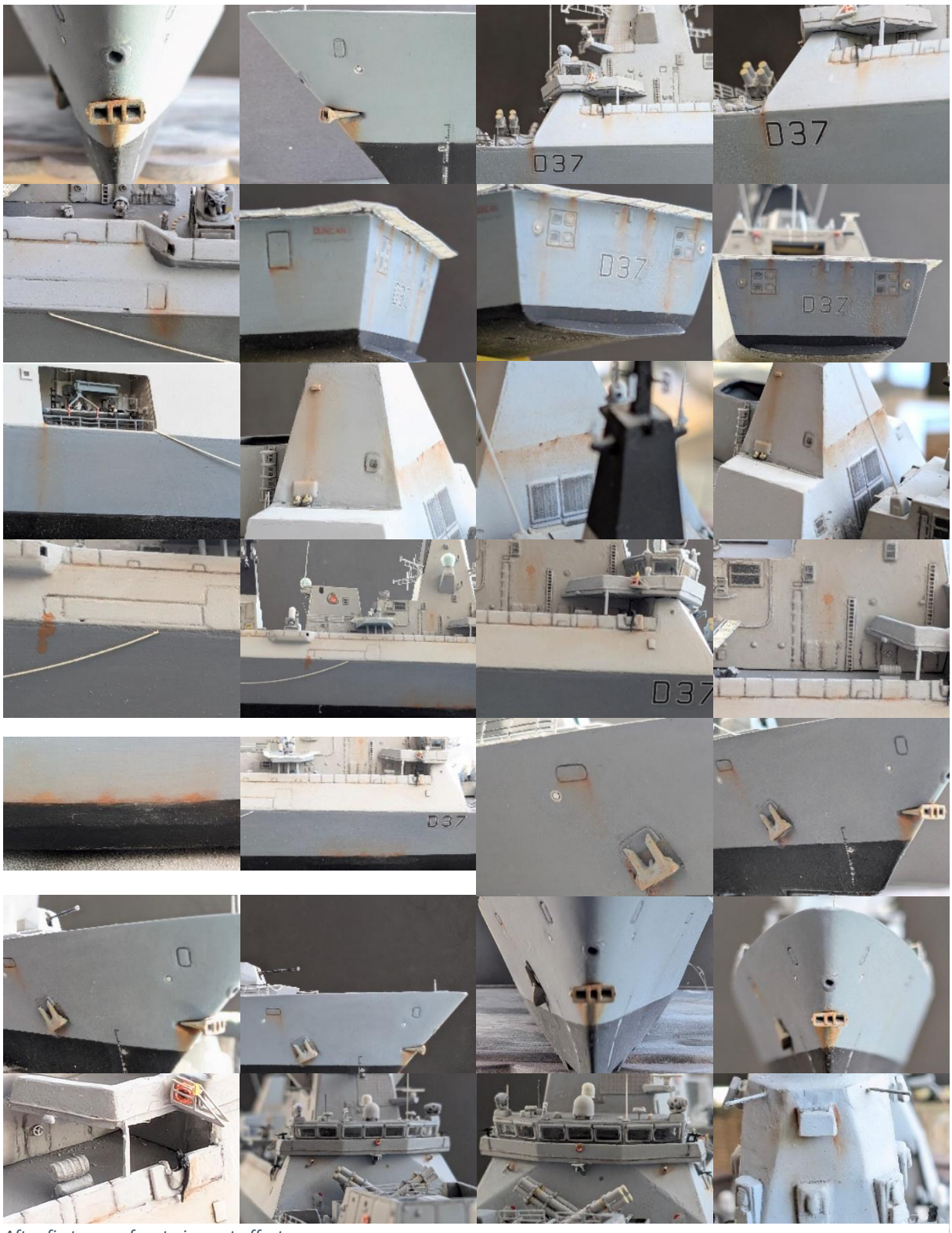
I had already added some rust around the anchors (page 97) but it was now time to add some more around the ship, based on photos of the ship at sea.

Having made a lot of notes from photos of where rust should go, I began weathering with VMS Pigment Jockey. In this small scale it isn't easy to get acceptable streaks of rust, as the pigment tends to spread out in the carrier (VMS Universal Weathering Carrier). I achieved some reasonable results, but one disaster where I could not get the pigment off on the upper hull, leaving a big



rust-coloured stain down the side of the ship.

I kept working at it and found that I could get more of the stain off by scrubbing with a stiffer brush, wetted in carrier, and removing the wet carrier with a sponge before it dried and re-deposited the pigment. I contacted VMS



After first pass of rust pigment effects

for advice, and of course they recommended their new Stain Remove product! I will have to get some to remove the last staining.

I continued with more rust streaks and spots. Overall, I think the results are acceptable. The transom is most heavily rust-marked, as shown in photos of the real thing.

I examined the results carefully in daylight and took pictures. I concluded that most of the rust is fine, but it would be better if I could accurately remove it either side of the runs, so that they are narrow and straight. There are a few blotches that must be reworked or removed. I did some experiments (off the model) with various solvents to see what took off the pigments. White sprit (but not odourless thinners) seemed best, followed by Universal Weathering Carrier.

The VMS Stain Remove arrived. Using it exactly in line with the instruction video, it is not easy to get the pigment off. The instructions require, first, removal of the binder by using Universal Weathering Carrier, then lathering with Stain Remove, then washing off with water, and finally drying with a hair dryer. Sometimes this works but other times it just seems to spread the stain. Getting a good lather is important, but it needs a dry brush and considerable scrubbing. Multiple repetitions eventually get most of it off. I spent several hours working just on the starboard side, but it is an improvement. I mounted the model back in the vice for ease of access, having already knocked off part of the flight deck netting.

The cleaned areas seem to acquire a bit of shine. I will need to repeat the matt varnish coat, which underlines the error I made in not applying a satin coat before the weathering stage.

To reduce the risk of spreading stains across clear areas, I surrounded the remaining areas I needed to work on with Vallejo Liquid Mask. That certainly protected the surfaces, but made it hard to see the subtle colour variations I was trying to deal with. It came off easily when the time came.

My next disaster: as I worked on the transom, the model fell out of the vice and fell onto the bench. Damage included ripping off the flight deck nets that had survived recent handling, breaking off a comms yardarm, taking off a GPMG and an antenna, breaking off the polemast cap and, possibly most serious, badly bending one of the spike antennas. I left the repairs for later.

I managed to take off some of the rust on the transom; a little too much, in at least one place. I wet sanded a large rough area I found on the transom and that also took off some rust. It also seemed to leave some odd areas of white staining. I did some touch-ups to the paint, again narrowing some rust areas. I had the now-expected colour matching problems and added a little white to the Ocean Grey and tried to dry-stipple the paint on to blend it. This reduced the prominence of the rectangle around the pennant number.

The finished transom

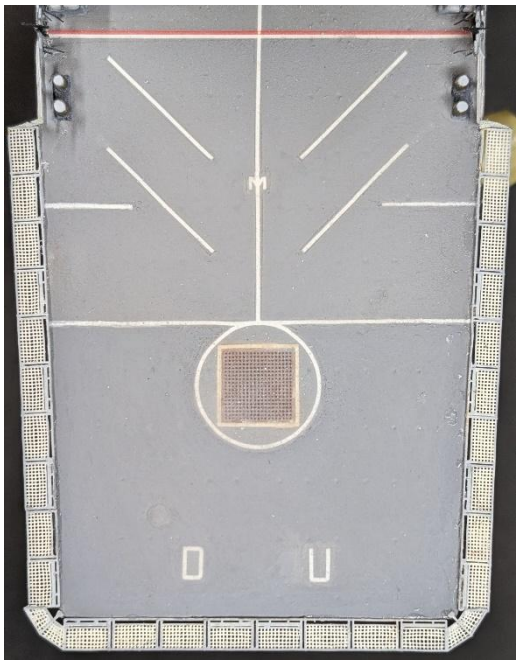
The port side needed much less work, though some of the stains took several attempts to remove or blend them. The overall effect was still a bit more of a rust-bucket than I wanted, so I had another go at reducing the impact of the rust pigments by removing most of it from the railings on both sides, leaving only isolated patches. I ended up mixing some paint and retouching (or almost entirely repainting) the starboard side bulwark panels, which were looking dirty even before the rust went on.

Rust around the sensor at the top of the foremast was largely removed. I eventually declared myself satisfied with the rust effects.

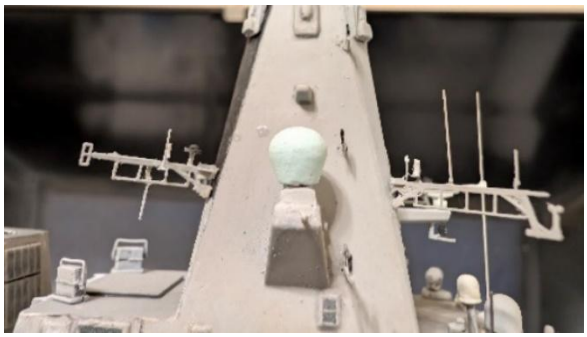
More repairs

I made a list of repairs needed, most due to the dropping disaster, and came up with 14. I bent the badly-mangled

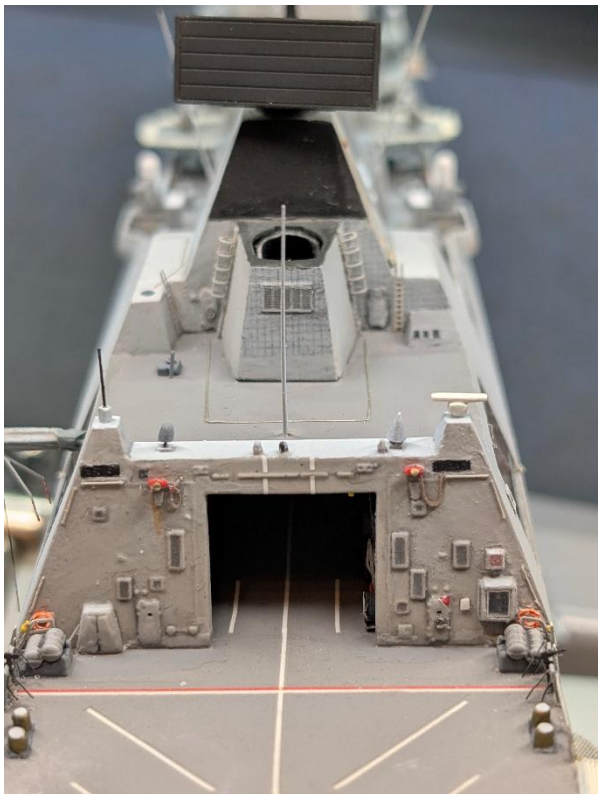
starboard spike antenna straight by making repeated small bends with my fingers and got a reasonable result without too much difficulty. Replacing the flight deck netting was a different story. I could not get it to bond in the right places and ended with dabs of glue on the deck, visible glue along the joins and some of the gaps in the netting frames filled with glue. Some painting may well be needed over the glue and scratched brass.



The yardarm and two yardarm antennas were refixed. The bow hatch support past was replaced, yet again. The starboard life ring ejector had been crushed and was bent back out. The GPMG and loudhailer were glued back to the bridge wing – fortunately I had a spare, painted loudhailer. The lower sensor arm on the foremast was wobbling and was re-glued. The sea boat antennas were refixed. Turning from CA to Ultra Glue, the polemast top was carefully stuck

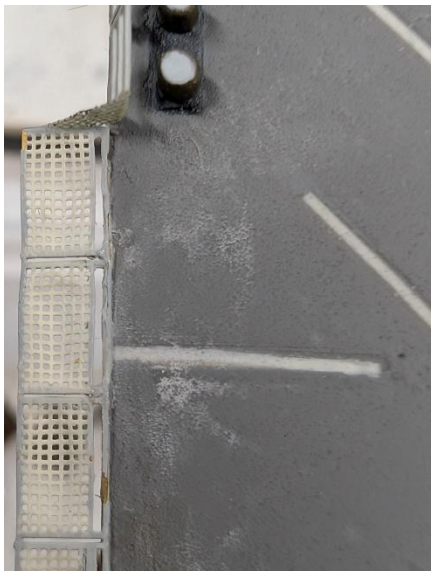


back in position and the helicopter rotor was glued on for the third time. The lightning conductors on the foremast were carefully bent back into position using flat, sprung pliers to make sure the bends were at the base rather than along the length. This was not as hard as I anticipated, as there were no new breakages. The only one needing more glue was the



already-broken lower forward port conductor.

I painted the bags or coils under the bosun's chair mechanism (starboard side of the aft mast) in Portland Stone, based loosely on one photo. I touched up scratches on the long antenna on the bridge roof in Insignia White.



Touches of black paint on the polemast cap and sea boat frame, and of Wolf Grey on the netting frames, finished the repairs apart form dealing with glue spots on the flight deck. I sanded with successively finer grits own to 2500, which was an improvement although the marks were not entirely invisible. However, I again had problems with a white residue appearing, which seems impervious to washing or further sanding – I am reluctant to sand too hard. I suspect it is the dust from sanding varnish, bonding with the varnish coat. It disappears when wet and there is a suggestion online that another varnish coat will make if vanish – it is suggested that it is really just a reflective surface. I hope so, or the deck will need to be painted yet again.

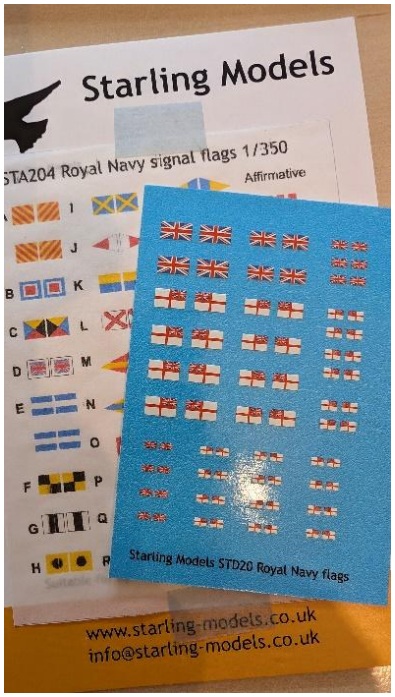
Nearly finished (top image, some repairs not completed); radar scanners not seated

Flags and halyards

Duncan is going to fly signal flags for “Recall All Boats” (Quebec) at the full and “Helicopter Flying Operations” (Hotel) at the dip (2/3 up, meaning the operation has not yet started). Square signal flags should be size 4, which would have a 4’5” fly, working out at 3.8mm in 1/350 scale. Ex-RN flags on sale seem to be 140x110cm (or 142x109), which would be 4.0x3.1mm, including a narrow white strip along the hoist.

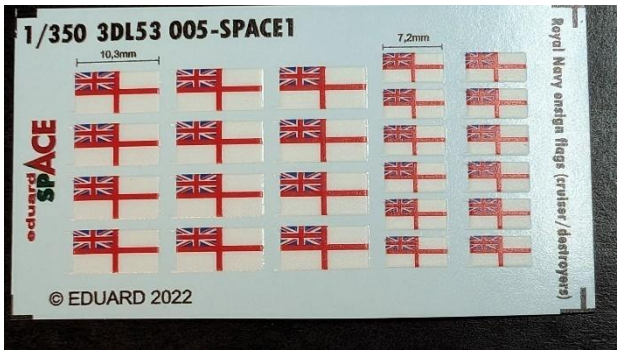
Hotel, "helicopter flying operations"

Quebec, "all boats return to ship"



I previously bought the Starling Models Royal Navy Flags and Royal Navy Signal Flags sets.[56] The latter is useless, as it represents World War 2 signal flags, not the ICO flags adopted in 1954. The set containing the ensigns is too small for 1/350, and the flags are not in the correct Royal Navy 2:1 proportions. I bought the Eduard ‘Space’ Royal Navy Ensign Flags set[57], which is much better. Two sizes are provided, roughly equivalent to size 6 and size 8 ensigns (see page 269). The larger size is the same size as the Airfix decal, but the cross on that is too thin. For the boats, I will need to use the Atlantic Models decals.

I decided to use the 0.03mm wire for all the halyards and other rigging. I had some pre-primed in Vallejo Surface Primer and I painted it in the cream colour used for the netting, mixed from Portland Stone and White. I researched the rigging layout (see notes and drawings on page 279 in Appendix 4). Some of the runs seem to change between photos, so the plan is not entirely fixed.



[56] Starling Models STD20 and STA204

[57] 3DL 53005 Royal Navy Ensign Flags (cruiser/destroyer) 1/350

My first attempt was a disaster. I tried to do the complicated run on the starboard side of the foremast, which eventually runs diagonally across its front. My VMS Flexy CA glue would not hold the end in place under tension and the wire had a strong tendency to curl. By the time I reached the third attachment point I realised that the runs sere not straight and the paint was peeling off the wire, so I removed it entirely. Keeping the wire under tension is going to be crucial.

I started again with a fresh length of wire. I held it between two clamps to control it and prevent curling, and primed it with VMS Metal Prep, which is probably superior to Vallejo Surface Primer for metal. I first cleaned it with VMS Universal Weathering Carrier, in accordance with the primer instructions. The primer was left to dry overnight before applying two coats of cream-coloured paint. The clear VMS Metal Prep makes it hard to see whether the primer has been applied evenly, but then it is easy see the paint going on.

I ordered a fresh bottle of VMS Flexy CA glue, as the previous one may have lost its bite.

I primed a piece of kitchen foil on both sides in white Vallejo Surface Primer and painted a 1cm strip along each straight edge, one white, one yellow, for the signal flags. I then stuck masking tape 2mm from the white straight edge and sealed it with another white coat, then painted the 2mm edge strip red, to make the Hotel flag. When the masking tape came off, it revealed a perfect red stripe one side and peeled most of the paint and primer down to bare foil on the other. Fortunately, there is a length that did not peel, sufficient to make several flags.

Meanwhile I tried out two of the smaller Atlantic Models white ensign decals for the sea boat, one simply folded back on itself, and the other folded around a white-primed sliver of kitchen foil. Either looked good at first glance, though I suspect neither is folded perfectly square.

After my earlier failure, I decided to make templates for the halyards from thicker florist's wire. It holds its shape, is easier to see and handle and is forgiving of repeated re-bending, unlike the fine wire I will actually be using. The templates enable me to pre-cut the fine wire to exactly the right lengths and to

Template and actual wire before fixing

make any sharp bends before messing around with the model, minimising handling of the fine wire and damage to its paint covering. I will be able to fix flags to the pre-cut lengths before mounting on the ship.

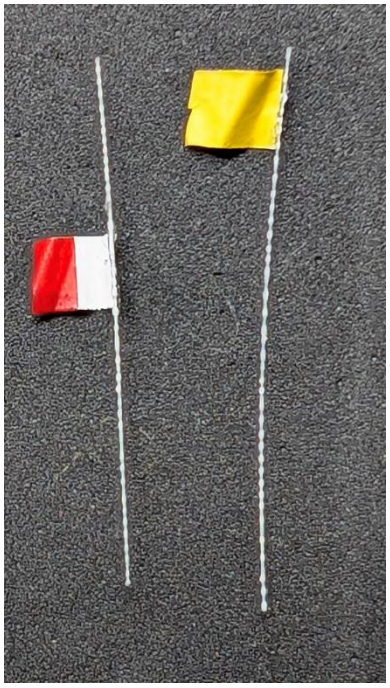
I started, once again, with the most difficult run, the rope zig-zagging across the starboard side and front of the foremast. With many failed bonds, much surplus glue and a lot of swearing, I managed to get it fixed on, using my newest VMS Flexy CA. Keeping the wire under tension was difficult, but essential for straight lines. The angles could be sharper, and some runs are not 100% straight. In the process the wire pulled off a yardarm and an antenna, which were refixed.

I decided I needed to somehow represent the pulley blocks, as otherwise the lines seem to change direction for no reason. I added a dab of diluted Perfect Plastic Putty to each angle and cleaned it up with tools and water. Once painted, these were a great improvement, especially after I tidied them up with a tiny file.

I added the short line between the platform below the search radar and the bridge roof.

Picking up the boat ensigns, I went with the decal folded back on itself. The foil-backed one showed a bit of extra thickness, but in any event was not folded square. I trimmed the edges, leaving a band of clear film at the hoist end for glue, and fixed to the boat.

I cut out the signal flags from the painted foil, aiming for 4x3.1mm. The Kilo flag was fairly easy, and I made plenty to choose from. Doing Hotel,

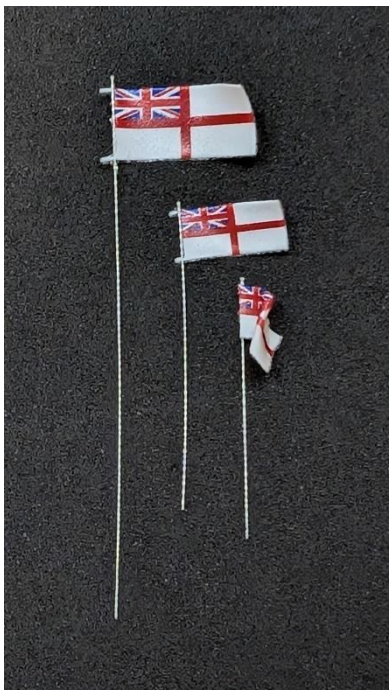


much of the paint (and primer) peeled off the foil, and I ended up with only two usable, and those needed touching up on the white. Both were glued to lengths of pre-painted wire with Mig Ultra Glue – much easier to work with than superglue, because of its instant tack and long open time.

Glued the signal flags in place, using VMS Flexy CA. the top fixing took a few attempts, as it was hard to hold the wire steady while the glue cured.

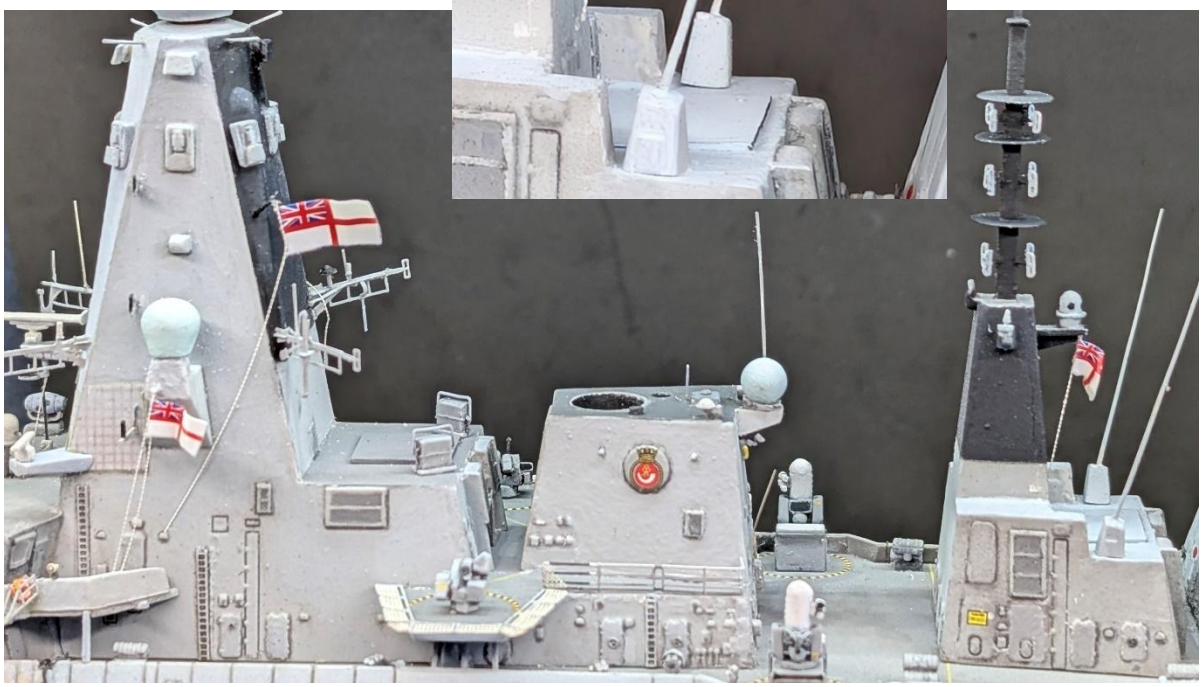
On to the ensigns. For reasons I have not been able to ascertian, there are several pictures of Duncan and at least one other Type 45 flying three ensigns, with the largest at the gaff high on the foremast. As it adds colour and drama, I am reproduce this.

The Eduard Space ensigns are roughly, but not exactly, the correct scale sizes. Once soaked off the backing paper, they feel like soft plastic. I found that they could be bent into animated shapes, but they had a tendency to re-straighten over time. I added some CA glue to the folds, and that seems to hold them in shape. The ensigns were easily fixed to the pre-cut lengths of wire with Ultra Glue. I bent the wire for the large ensign to give a dramatic, wind-blown effect, which is very pleasing. They were fixed in place, not without difficulty. The largest, top ensign was really troublesome. I could not get the CA glue to bond the wire to the gaff. I eventually succeeded by painting CA accelerator on the gaff and applying blob of CA glue to the end of the wire. Ultra Glue

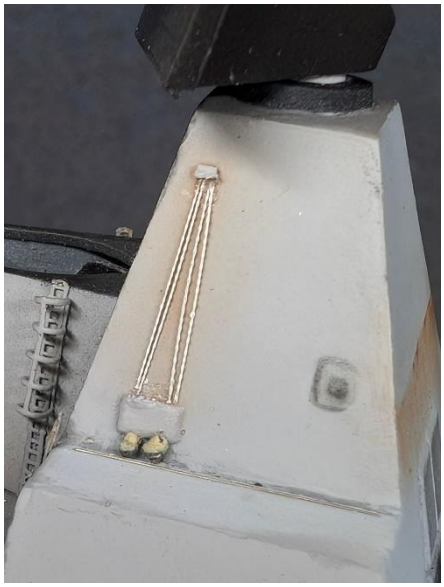


was used for the smaller aft ensign, but it also had its troubles, not being stiff enough to prevent the flag twisting.

The shine on the ensigns needs toning down with the final varnish coat.



<u>The final item on the construction of the ship</u>: attaching the four lines of the bosun's chair (?) on the aft mast, for which my reference material is poor. The main problem was cutting the 0.03mm wire to exactly the right length. It was fixed with Ultra Glue. I did some touching up of the paint, covering rust stains on the boxes top and bottom, and on the bulkhead away from the lines. A final coat of VMS matt varnish was sprayed on; I almost forgot to mask the windows, and I did forget to finish dusting, leaving some debris to be blown about by the airbrush, but I don't think any harm was done. The varnish did remove the worrying white bloom on the flight deck.



When dry, inspection showed a different slight white bloom on the matt black aft surface of the foremast. As an important feature of the model, I could not leave it, so I mixed up 2:1 Model Colour Black and Vallejo Matt Base, thinned slightly with water and 10% Winsor & Newton Flow Improver. This went on nicely with a brush and seemed to blend well with the existing paint,

so I ended up repainting most of the matt black surfaces. They all gained a deeper black and looked dramatically better; accumulated white dust spots were covered. **Ship complete!**

I intend to do a photo session with the ship before fixing the helicopter and crew and fixing it to the scenic base.

Sealife

I have decided to include animals in all my scenic models (this being the second). From the earliest stages, I thought about including pilot whales in this one, in a school in front of the ship.

I made about 30 whale bodies from a long sausage of white Milliput. The largest whales should be 17mm long (6m in scale). The bodies are simple in shape when viewed from the side, but the tail seems to narrow horizontally. I pinched the rear with pliers and fingers to get this narrowing, and rounded the head into a blunt bullet. At this point they could equally be tadpoles or slugs, but we'll see how they turn out. I have no idea how to do the fins. Back to this later.

December 2024

Crew figures again

I returned to the crew figures. I have painted far more than I need, but redundancy is good and will allow me to pick the best ones.

I scraped the frets the figures came on to remove any feet that had snapped off and tried to use these and other scraps to glue missing feet onto some figures, especially the two pilots, who will be prominent. Boots were painted black, except for the tan shoes of the pilots.

I added the white trade patches to the right arms of most figures, having realised my earlier error of putting them on the left.

I settled on Sand Yellow to represent the desert tan camouflage of uniforms, helmets and flak jackets, repainting the previous efforts. I have abandoned any thought of stippling the DPM pattern. I also changed to Sand for white flesh, repainting most of the arms and faces. The figures in full tan camouflage look flat and uninteresting, especially as the contrast between the two colours is low. I repainted the faces under helmets in a darker shade, but I still don't like the desert camouflage figures.

High visibility vest surcoats and helmets[58] were painted on a variety of figures in Medium Blue, Intermediate Green and Vermilion. Particularly pleased with the medic with her red cross.

Having watched a YouTube video tutorial on painting fine lines, I set about adding the white reflective strips to the surcoats, with the distinctive "Union Jack" pattern on the front and two parallel strips joined by a white label on the back. The technique

Today, 8 December 2024, HMS Duncan returned safely to Portsmouth after her six-month deployment. She did not go to the Red Sea, instead being ordered to remain in the Eastern Mediterranean during the turmoil in Israel, Lebanon and Gaza, including serving as air defence escort to USS Wasp.

[58] The best reference I could find for the meanings of surcoat colours is https://bootcampmilitaryfitnessinstitute.com/2024/03/23/a-brief-outline-of-royal-navy-vessel-and-flight-deck-surcoat-colours/ . Red is "main group" and there is photo evidence of red surcoats attaching the helicopter tie-downs. Blue is said to be "containment party". Different colours are used on carrier flight decks. Green may denote electrical trades.

is to use a liner (rigger) brush and thin paint, thinned with flow improver, with some retarder also added. My brush is sable, size 1.The painting is done with the tip of the brush, using it like a pen. This was moderately successful, although there were several rounds of corrections with white and the vest colour (also thinned with flow improver) before I was satisfied. The large quantity of flow improver seems to leave a slightly glossy finish.

In a long painting session – about 60 figures – I went through them all and tidied them up, mainly by touching up the blue uniforms and removing the white patches I wrongly put on left arms; in most cases, with my new-found confidence in the liner brush, I was able to reduce them to tiny strips representing the Union Flag worn on the left sleeve. Still unhappy with the figures in tan combat gear, I attempted to add grey to define the helmet shadow. In practice this meant repainting the helmets and faces of all these figures. Again with the liner brush, it became easy to paint a clear helmet line

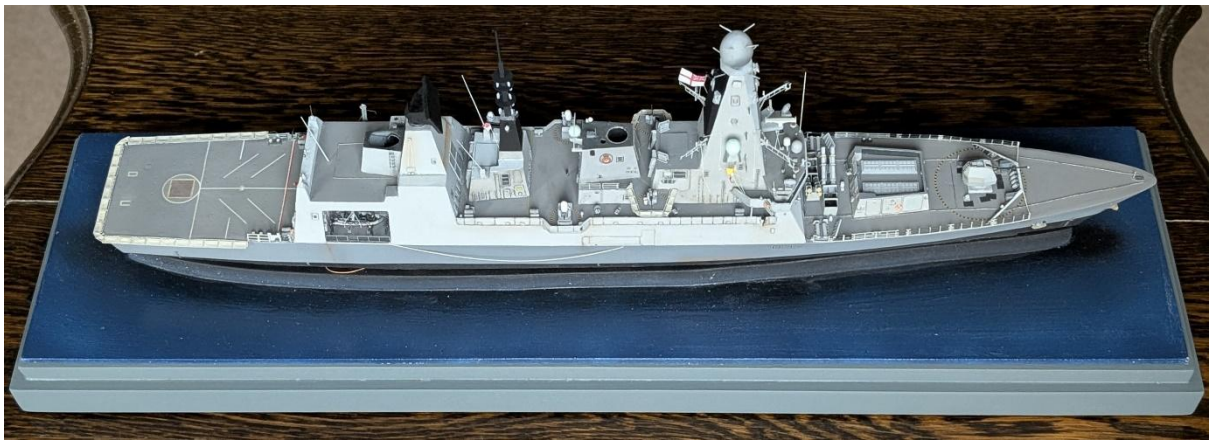
as a diagonal across the sides of the head and a straight line across the front, taking care to leave a thin grey line at the back above the collar. A blob of Sand as the flesh colour for the face, again taking care to leave grey all around as shadow, and a much more pleasing effect was achieved.

I discarded a few figures and separated those with missing feet, about half of them. I will only repair the feet if they are needed in places where the feet are visible, though I did add scrap plastic feet to the special figures I am likely to use.

Progressing towards the seascape base

The missing small, white antenna on the starboard end of the bridge roof was replaced.

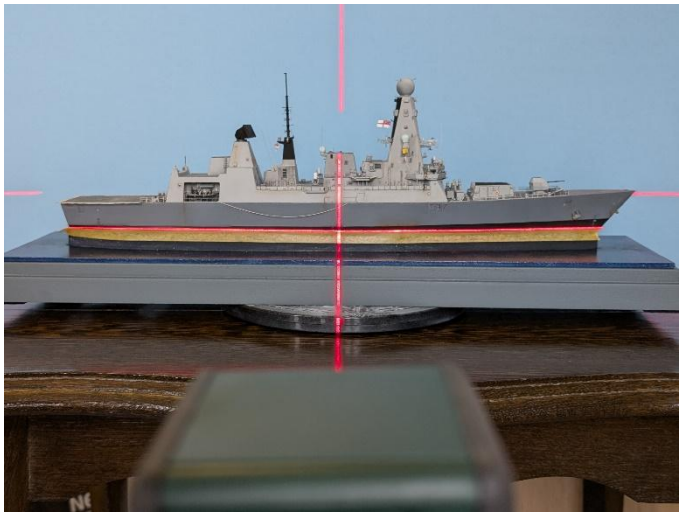
I placed the model, loose, on its base, ran the wires through their channels and pushed the switches into position, securing the wires and batteries in place with tape under the base. I spent a considerable time fixing the electrics, due to an intermittent issue with the battery contacts. I re-soldered the contacts and cleaned them all, and it now works reasonably reliably. The aft (search) radar was not turning; I concluded that the tube was not gripping the shaft sufficiently, and risked putting PVA glue inside the tube, also re-lubricating the ring with silicone lube. I did not want to glue the tube on firmly, so as to keep the motor unit removable.



The PVA was an improvement, but the tube was still not gripping. I went a step further and used Bostik All-Purpose glue, and that got the radar turning. The scanner is not seated properly, but there is not much I can do about it: the scanner is tilting due to the angle of the shaft, so pressing it down does nothing. I ran some black paint into the gap, making it much less obvious.

There is a noticeable dimming and flickering of the lights when the motor is turned on.

I decided earlier[59] that I needed to raise the bow by about 4mm. I made a wedge of basswood, sanding it down from 5mm thickness, painted it black and glued it in place on the base. A line of 10mm yellow masking tape was run along the waterline for photography purposes, allowing the yellow to be removed in post-processing. I feared that the bow might now be a tiny bit too high, but I checked it with my laser level and the top line of the tape was as near perfecly level as I am likely to get.



I won't go into details of the photography sessions, except to record that I took a lot of video then realised I had forgotten to turn on the rotating radar scanners. Getting the aft radar to turn smoothly was still problematic and I used more glue and lubricant. The two plastic tubes had parted, so if there is more trouble, I might need to disassemble everything! The sides of the guide tube fixed to the scanner were sanded, as were the edges of the aperture, and re-lubricated. Convinced that the tube was rotating on the shaft in the face of the slightest resistance, I resorted to superglue. That seems to have fixed the problem, but there is now no means of disassembling the motor mechanism without

[59] See page 175

breaking this bond. There is a visible white gap below the aft long-range radar as it rotates, but the mechanism now seems reliable.

With the photographs taken at this point, I made the What's Where diagram in *Appendix 8*.

Photos showed that the gantry crane needed further re-fixing, so I did that. Having failed to mask the three scuttles below the bridge before matt varnishing, I added a drop of Winsor & Newton Galeria gloss varnish to each.

Cetaceans

Returning to the pilot whales, dorsal fins were made using the leather punches and 0.25mm styrene sheet. They have a distinctive hooked appearance. A 3.5mm punch cut a circle, then I cut long chords of the circle to get three equal segments, leaving a triangle in the middle to be discarded. A 0.8mm punch then cut the inside of the hook, aiming just to one side of the centreline of the segment. Although not entirely consistent, I was very pleased with these when glued in place with Ultra Glue. For smaller whales I used a simple triangle for the dorsal fin.

Whales with dorsal fins and flukes glued on

One "whale" came out the shape of a bottle-nosed dolphin so I am doing him as one!

The flippers and flukes of all the whales can also be simple triangles. The flukes were easily made by making angled cuts to a strip of plastic sheet.

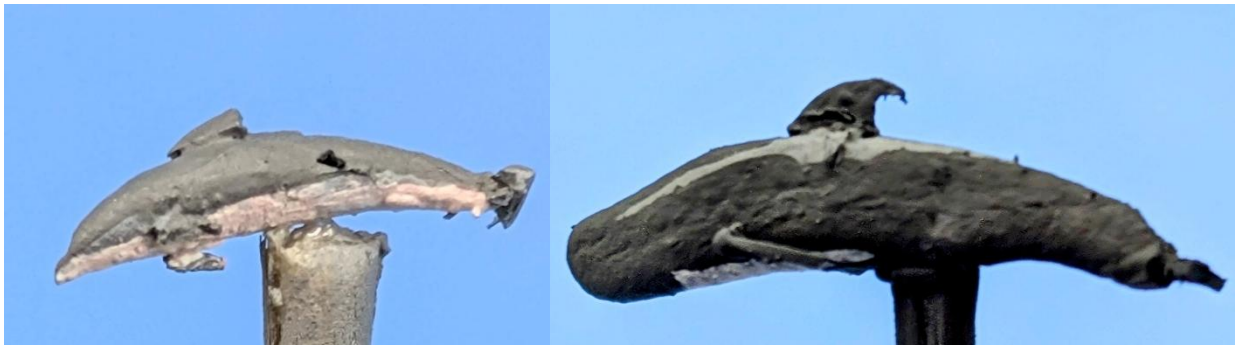
The pectoral flippers were added, using pointed slivers of plastic sheet, swept well back. Perfect Plastic Putty was used to fill dimples in the faces of some whales, left over from the rolling of the epoxy putty.

I shaped the nose of the dolphin and a couple of whale heads with a file, but decided shaping the whale heads was not going to be worthwhile.

I aborted an attempt to prime the whales in a takeaway container with the airbrush, as they got thrown about violently in the airstream, though I was lucky only to lose a few fins. I glued the whales onto half-cocktail sticks, using Ultra Glue for its immediate tack – I hope it will not be too strong.

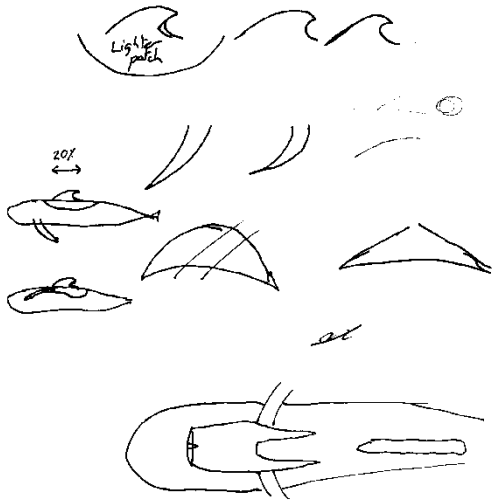
A few dorsal fins were replaced, but I decided to do without the small number of flippers that had gone missing. The whole pod was airbrushed NATO Black, then the back and belly markings were added, both in mixed colours. After a round or two of corrections, the result is quite pleasing. I especially like Damian the Dolphin.

I gave the pod a coat of VMS satin varnish – gloss for Damain as he will be shown jumping out of the water. Once the whales



were detached from the supports, the resuting white spots were touched in with a brush.

The ocean



Pilot whale fins and markings

I did a test pour of resin into a clear plastic takeaway cup. I first installed two black-painted scraps of sprue on clear acrylic rod supports[60] to represent whales, glued with Ultra Glue. 60ml of resin was mixed. A single drop of navy blue ink gave it quite a strong colour. Once thoroughly stirred, the pour went in smoothly and covered the "whales". I dropped in some silver glitter to represent a school of small fish. I used too much for the small sample – a tiny quantity suffices. It tended to float on the resin, but was pushed down and stirred in. I also stirred in some scraps of aluminium foil to represent larger fish.

After about an hour, the resin had thickened to a gloopy consistency, but most of the "fish" had floated to the top or sunk to the bottom. I stirred them up and added some more. It will be best to wait until this point to add fish on the main pour, though it is already hard to stir without shifting large gloops of resin. I also added a piece of wire coated in (dry) Vallejo Snow to test as a dolphin trail, and stirred in some uncured Vallejo Snow to test the effect. It looks nice but doesn't look particularly realistic for anything unless I can use it

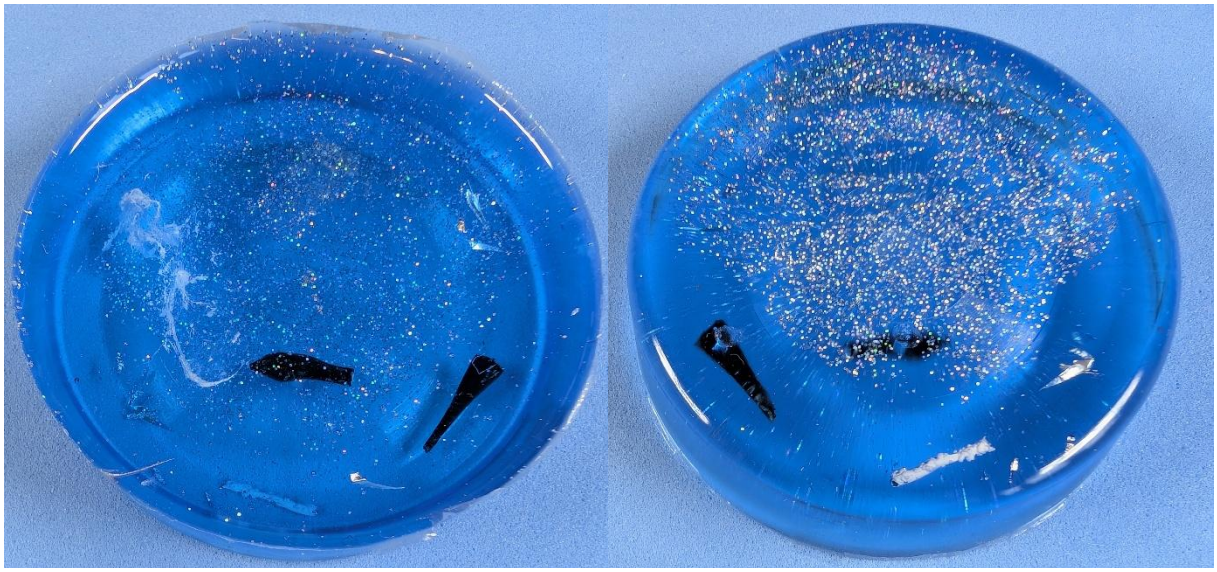
[60] 2mm clear acrylic rod
https://www.amazon.co.uk/dp/B07XM78J6X?ref_=pe_27063361_487360311_302_E_DDE_dt_1

for underwater trails behind whales. It could be used around the ship's hull and in its wake.

After nearly two hours the resin was thick and possibly not self-levelling, so I did not interfere with it further. The Snow on the wire may have spread out into the surrounding resin. The colour of the resin is a bright blue, not entirely what I am hoping for.

I measured the waterline on the model and concluded that the resin depth will be 16mm, slightly more than I calculated previously. My reckoning is that about 700ml of resin will be needed. Pours are not supposed to exceed 6mm in depth, so three pours will be needed. I may do a sealing pour on the wooden base first. Gaps between pours should be less than 24 hours, or the surface has to be sanded and cleaned, according to the instructions.

For no very good reason, I put down Vallejo Snow on the base to form the wake of the ship. It looks great, but it will be covered by the layers of resin and



Experimental resin pour – Top *Bottom*

more Snow. It is bit bright, given my policy of not using pure white on models other than for emphasis.

Once the resin test pour was hardened overnight, I broke it out of the container. Points learned are:

- There is a heavy meniscus, soft and bending at the top. Probably increased by tilting the cup before the resin hardened.
- The colour is very bright blue. It looks OK against the Dark Mediterranean Blue model base, but I experimented with the inks in water and decided on two drops of Navy ink and one of Black per 100ml to give a darker blue. Teal ink gives a more realistic seawater colour, but I don't want the water to be a very different colour from the base.

- The wire, some of the foil fish and a lot of the glitter had sunk to the bottom, even after an hour's curing. I can't rely on suspending anything solid in the resin without support.
- The foil fish (simple tringles) look great when they orientate correctly – if on their sides they are not visible. I will need a lot of them to achieve any impact. I am dubious about the glitter for smaller fish shoals, particularly for its tendencies to sink and to spread out in currents in the uncured resin. Apply these shoals last in each layer.
- The clear acrylic rods are visible through the resin. Not much I can do about that.
- From the top, looking through about 10mm, the resin is quite clear. From the side, it is quite opaque. That might be improved by polishing the sides. No detail will be visible on whales more than 10mm in from the side.
- The Snow looks effective for creating streaks of bubbles in the water but is hard to control. It seems to sink but leave an upward cloud above it, which looks quite nice.

I found that the Making Waves product[61] I bought was solid in the jar. This seems to be a problem with Deluxe Materials products. The lid is not tight-fitting and was probably loose.

I jacked up the model on wooden blocks in preparation for applying the glue to stick it to the base. Masking tape was used to create a barrier to protect the wires from the glue; in the event this tape got in the way when the ship was lowered into place and had to be removed.

A strip of masking tape was used to mark the positions I needed to know about when applying the glue: where the big gaps were and where the opening in the ship's bottom start and end.

Half a tube of J-B Weld epoxy was mixed. This was the only slow-drying epoxy glue I had, but I also wanted its dark grey colour. A thick line of glue was applied all around the plinth, with extra thickness where the model would not sit directly on the wood. When satisfied that I had a continuous bead. The ship was lowered into it. I found that there were considerable gaps, despite my efforts. In places the plinth, and thus the glue, were slightly outboard of the hull and the glue tended to flow when piled up thickly. The seal needs to be entirely watertight so I spend a considerable time pushing the adhesive into gaps with flat wooden stick. The result is quite messy, but I didn't attempt to clean up the mess, as it will all be below the waterline.

Whilst waiting for a replacement of the Making Waves product, I acquired some Pébéo Gloss Gel, an inexpensive gel medium. It was tested on the resin test piece, with disappointing results: after overnight drying a lot of it was white, rather than clear. I expected that with one thick dollop, but a small

[61] Deluxe Materials Making Waves BD39 https://deluxematerials.co.uk/products/making-waves

wave was white, and there were traces of white even in small ripples. Probably not safe to use this product at all, unless it clears further over time.

As a precaution against leaks when the resin is poured, I painted over the epoxy join with a 50/50 mix of PVA glue and water, hoping to seal any small holes.

Fixed to base with epoxy and PVA coating

Almost certainly unnecessarily, I then painted over the epoxy with AK 3G Strong Dark Blue to blend the hull and base below the waterline.

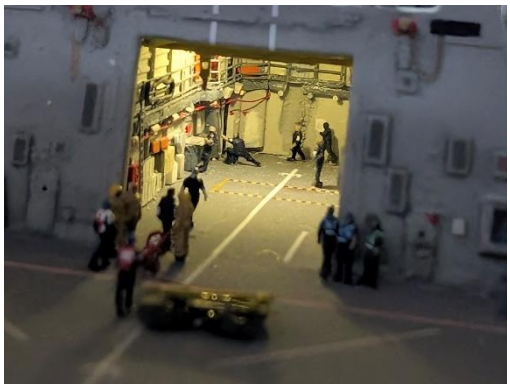
I noticed some grey stains on the port quarter of the hull, almost certainly epoxy. I painted them out with Medium Grey with Matt Base.

I also noticed than the edge of the blue base had gone nearly white. As it will show directly and not be covered by resin, I airbrushed it with Dark Mediterranean Blue, realising that this committed me to another coat of gloss varnish. That was applied by airbrush once the paint had dried.

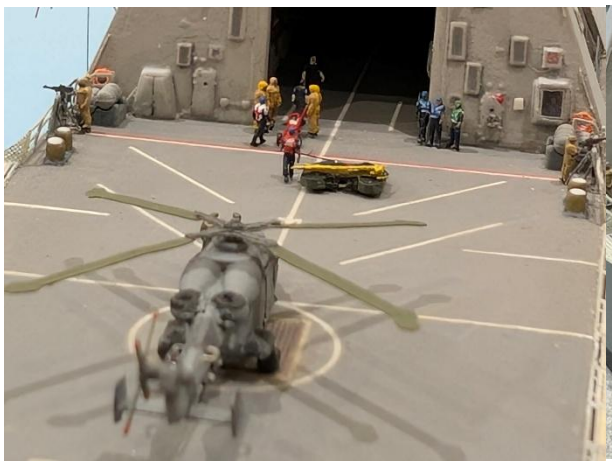
Adding the crew figures

Returning to some more enjoyable modelling, I added crew figures to the bridge wings and minigun positions. One sailor received major surgery, repositioning an arm and a leg to show him hauling a signal flag halyard. A few other crew figures were dotted around, but sparingly: crew are not often visible at sea on these vessels, except on the bridge and flight deck. They were fixed with Ultra Glue, allowing for repositioning.

In the process I knocked off, and then lost to a tweezer ping, the replacement small white antenna from the bridge roof. Serendipitously, only moments before, I had found the original antenna on the bridge walkway, so I refitted that. I also glued back on a ladder that I found loose on a deck aft.



The figures for the hangar and flight deck were added, along with the helicopter mover and fire trolley. They look fabulous. In the course of taking photos, I knocked the flight deck netting and, with a background sheet, knocked off yet again the prow hatch retaining post. The latter was refixed. I removed the aft netting section and refixed it, slightly more accurately than before, using CA. A touch up was done using Wolf Grey and a mix of Matt Base with Vallejo Medium Sea Grey. As before, the deck colour showed up noticeably lighter than the existing paint. Two more coats, with Panzer Dark Grey mixed in, showed up too light and too dark. After about four attempts I got to an acceptable finish, only then to clumsily break off the port side netting again! Several attempts to glue it, and then the aft netting, back on resulted in more glue on the deck, and thus the need for more paint… To finish the model with both my bugbears, at each end of the ship, I spent a long time colour matching the flight deck, and also knocked off again, bent, lost, remade, repainted and refixed the prow hatch retaining post.



After photos were taken of the hangar scene, the helicopter and the pilots were glued in place. Following advice on Facebook[62], I added the FDO in his

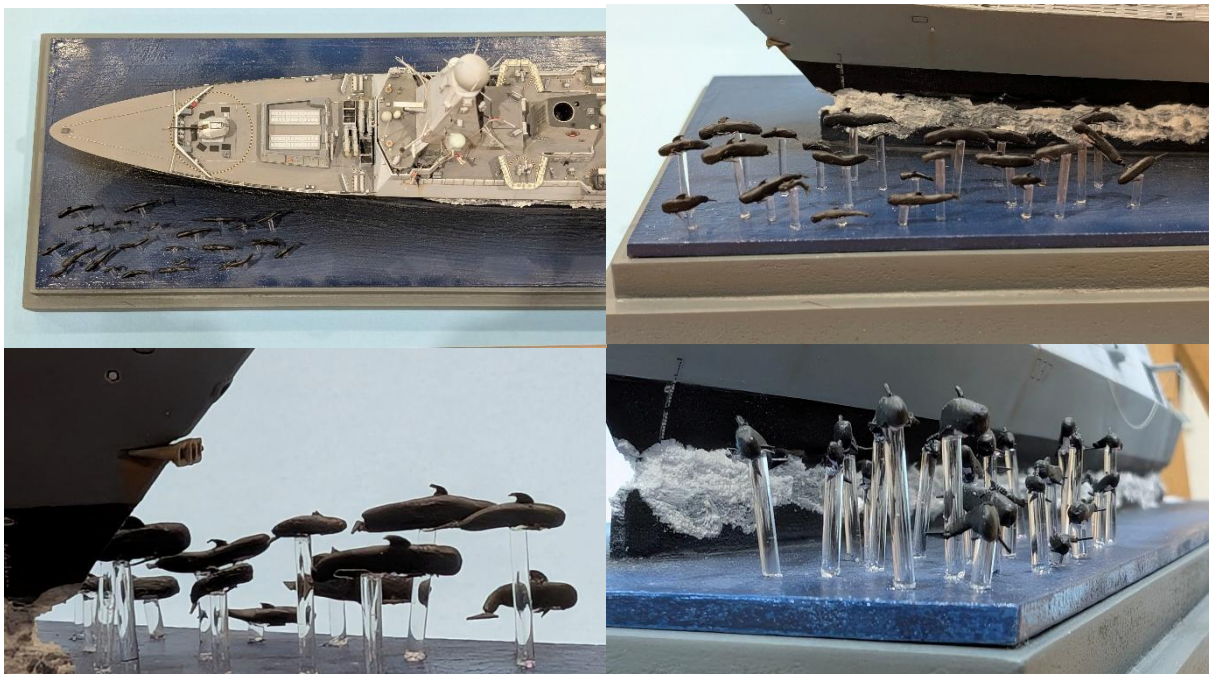
[62] See page 242.

yellow helmet and surcoat. Helicopter tie-downs were made from brass rod, and the crewmen attending to them were fixed in place.

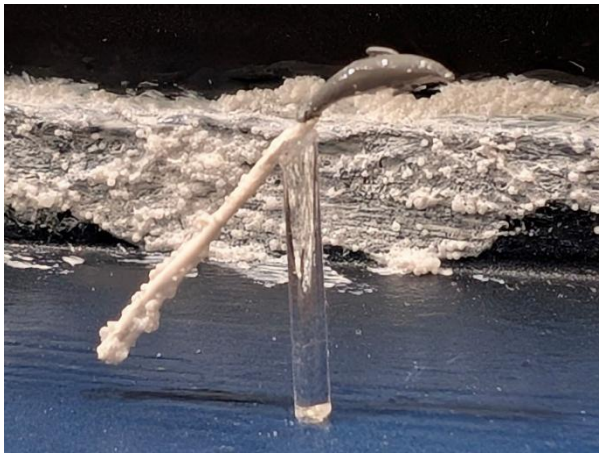
Return to base

The wave pattern diagram on page 275 was scaled up to wavelength of 9cm (giving a speed of around 14kt), printed on A4 paper and cut to form a template for the base.

I cut a length of sprue to 16mm to allow me to judge the eventual waterline when adding whales and the sea boat on their clear supports. I am not going to risk them sinking or twisting in the setting resin. Using the measure as a maximum, I cut various lengths of clear acrylic rod, using a hefty wire cutter, and fixed the whales to them with Ultra Glue. Damian the Dolphin was fixed to his white trail of bubbles. I mounted the sea boat on two lengths of rod and glued it in position.



I decided to further hide the join between model and base with a coat of Vallejo Snow all round. It will hardly be visible from above, as there will be white water in the boundary layer along the ship's side, but it could be visible from the sides if the resin is clear enough. The white might also provide a better background to see the whales from the side.



The whales and dolphin were glued in place. The school of whales was positioned ahead of where I calculated the bow wave would be, diverging slightly from the course of the ship. I did not want to give the impression that any whales were about to be run over. The best whales were positioned on the surface or close to the edge, where they are more likely to be visible.

After an attempt to build the dam for the resin with the MDF pieces I ordered incorrectly earlier, which are all 3mm too short, I decided it wasn't worth the risk of uneven corners in the resin and ordered new MDF pieces – I'm sure I could have bought and cut an appropriate piece of timber, but couldn't be bothered! So a few days' delay until the MDF arrives.

Meanwhile I designed the nameplate in Microsoft Word and made more aluminium foil fish. Making fish very tedious – cutting foil is hard because of its tendency to tear and drag rather than slice. The preferred technique was to cut a narrow strip, less than 1mm wide, then slice it diagonally to create, in theory, a parallelogram. Some shoals of fish were glued to the base, intended to be viewed from above, in a patch of diluted PVA. They look good at this point – but they could well be invisible once the water covers them.

February 2025

Pouring the resin

Within minutes of the MDF arriving, I had built the pouring dam. I first taped the corners, then filled the joints with PVA glue. Once snuggly fitted around the ship and clamped, I used a cotton bud to smooth the glue in the corners. I realised that I could use the previous set of MDF pieces to slip underneath the model base and support the edges of the dam.

The insides of the dam were covered in 3M packing tape, then the sides were taped tightly to the base underneath. I then laid a length of tape under each side and lowered the base onto it, then folded it up to stick to the outside of the dam, to ensure a seal all the way round. The gap all the way around the inside edge was carefully filled with Pébéo Gloss Gel medium. I hope that will give a double layer of waterproof seal but will dry clear, so that it will not show at the join between base and resin.

Ready for resin pour

Having first stood the model in a plastic sheet surround in case of leaks, I poured the first 100ml of resin, giving a depth of about 2mm. On the fly, I added an extra drop of black ink, so the ink is now two drops Navy, two Black, per 100ml. No issues arose with the pour, although spreading the resin with a wooden stick was tricky around the whales; though the resin would probably have self-levelled anyway. After two hours I added some fish, both foil and glitter, which both stirred in pretty well – though I may now be overdoing the wildlife. I was able to orientate the foil fish so they look like a shoal. I extended the dolphin trail with Vallejo Snow on the point of a cocktail stick. I dumped some more Vallejo Snow in the wake area.

After first pour and adding fish

The second pour of 200 ml (well, actually nearer 240ml) was added after about six hours, when the first pour had set to a gel. The larger quantity self-levelled more easily and went in smoothly, with very few bubbles. Damian the Dolphin had fallen over and was leaning against a wall, so I put a clamp on the wall, above resin level, to support him while the resin cured.

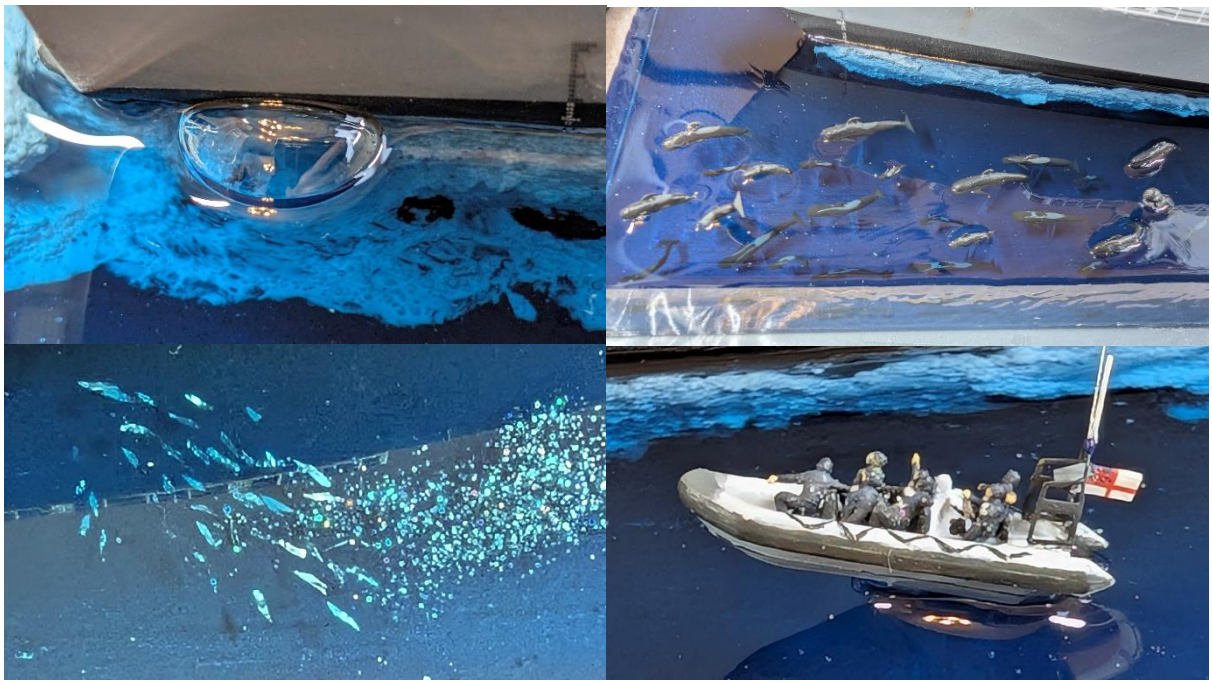
After three hours, more fish were added. This was really too late: the resin was thick and gloopy. Though it would slowly self-level, it had become stringy, and the strings threatened to damage the model. Pour number three, another 200ml, was added at 10pm, and some more fish before I retired to bed. Happening to wake at 4am, I did the final pour. I was surprised that it took the entire 200ml to reach the desired level, so the total use of resin was 740ml, less a small amount of wastage. A bit more than my theoretical calculation of 693ml. The resin reaches just below the backs of the top whales, just supports the sea boat and shows a narrow line of boot topping above the waterline all along the ship. Two whales fell over, so one's tail sticks up in the air, and the other is head out of the water; the resin must have softened the Ultra Glue holding them.

Resin pour complete

About 30 hours after the last pour, I removed the dam. I am satisfied with the result, though the resin is a little more opaque than I hoped – a little two much

ink, perhaps. There was a big bubble (around 1cm) under the starboard stern I had failed to notice, but it will easily be concealed. The sides are still a little tacky, so I will leave the resin to cure further before doing anything more.

Removed the pouring dam



A few days later, the resin was examined. There was a large meniscus all round, perhaps 3mm. The port face in particular seemed a little uneven. From the side, visibility into the resin was only a few millimetres.

The meniscus was trimmed off with a No 11 blade, using a sawing motion with the blade as close as possible to horizontal. That left a facetted, dull surface all round.

I decided to sand and polish all the top edges and all the sides. I wet sanded them with descending grits of wet & dry paper, starting with several vigorous

passes with 280 grit, especially on the uneven port side. That was followed by lighter (but still repeated) passes with 360, 400, 800, 1000 and 1500 grit. Dust was wiped away with wet kitchen towel at each stage. At 800 grit, I began using the DSPIAE reciprocating sander on the top surface. It was much easier to work around details (the dolphins and boat) and to avoid working in a single direction, but I was not sure how long the tiny sanding sheets remain effective. I found that I could not continue with it because I had no sanding sheets for it below 800 grit, so I reverted to wet and dry paper, used wet.

After 360 grit sanding

I decided to stop sanding the sides below 800 grit until after I had done the waves, as it seemed quite likely that some wave resin would spill down the sides.

Experimental polishing

Sanding left a dull grey surface. I purchased some NW1 resin polishing compound[63]. Experimenting polishing with cotton buds or a small microfibre cloth produced a clear, but still slightly dull surface. After a lot of further work, I decided that the problem was the polish, which is too coarse. I ordered a finer grade[64] for finishing. Even with that, disappointed with the slightly dull surface and apparent micro-scratches. There may be something wrong with my technique, but I don't know what. However, when wet, the surface is perfectly shiny and clear, and I hope that the wave material will fill any abrasions. In any event the wave products may conceal what is underneath. At the end I made

[63] PaiBoat Composites NW1 Premium

[64] PaiBoat Topfinish 2 Ultra Gloss

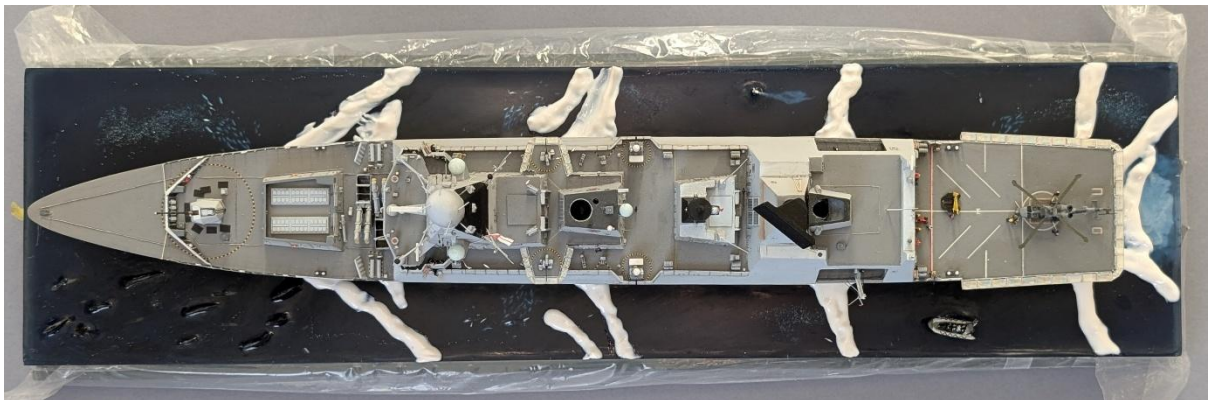
some slight improvement by polishing with a rotary tool, taking care to minimise polish splashing onto the model.

Surface after final polishing

I cleaned the surface with 50% isopropanol and allowed it to dry. It is still quite dull. I also cleaned polish spots off the model hull and whale backs.

Sea surface

Using the wave template I made earlier[65], I added the shape of the main waves with Making Waves, applying with a plastic coffee stirrer. I put on more thickly than I really intended, so have to hope it dries clear…



Immediately after first application of Making Waves

It did, after about 18 hours. Before the second application, I decided to try to make a rolling bow wave on each side. Making Waves is too liquid to form on its own. After some trial and error, I cut two shapes from some clear plastic sheet (PET from some packaging) and rolled them into cones by winding them tightly around my haemostats. They seemed to retain the shape (though applying heat made them uncurl) so hoping they would not unwind before the glue dried, I tacked them in place with Ultra Glue and blended them into the

[65] See page 234.

waves with Making Waves. The original waves were all thickened with a second coat of Making Waves.

Paper templates were made in various sizes with a 39° triangle cut out, to give the correct wake angle to whales and the sea boat. Using these, I gave each breaching whale, and the boat, its own bow wave. I began drawing the shape of the main waves on the ship's boot topping, so that there is a smooth curve from peak to trough and back again. The resting waterline should be higher than the top of the resin pour (at least without the meniscus) so there is room for the wave troughs to be below the nominal waterline. I also covered the spoiler on the stern, which should be below the waterline but isn't.

Noting that thin applications dry far more quickly than thick ones, I tried to reduce the thickness of coats of Making Waves from the third onward. With this application I covered most of the surface, except the whales area, and covered all the edges where the resin meniscus was still showing. The boat wake soon got lost in the waves. The surface is beginning to look really good, and my rolling waves at the bow look fantastic.

Bow wave after third coat of Making Waves

By the fourth application I was spreading the waves to make them gentler and rolling. By the fifth, which I was able to make after about ten hours drying, I was satisfied with the height of the waves and concentrated on sloping them gently. An area of each trough remains flat, but I am not inclined to spend

more time and material creating perfect sine wave curves right along the length.

Although I continued to add to the main waves where they were uneven, I stopped trying to increase their height. They were big enough, and they were worryingly grey rather than clear. On the other hand, I am pleased at the clarity of the surface, as the fish and submerged whales are visible, despite my polishing problems.

Using a cocktail stick, I added diagonal wave patterns around the bow, in the areas undisturbed by the ship's wake. On top of those, I gave the whales and boat their own wakes and drew concentric circles around the breaching dolphin.

March 2025

Once reasonably satisfied with the clear waves, white water was added. The Vallejo Snow product was easy to apply, using a combination of brushes and a piece of wire. I found that peaks of breaking waves could be drawn forward with a wet brush, and dropping water onto thin white coatings produced pleasing clear patches. However, I fear I have overdone it: the sea looks rougher than I intended, and I am not happy with the appearance of the white foam, which looks stiff and rough, which it should probably only be at the ends of breakers; too white; and completely matt, in harsh contrast to the super-

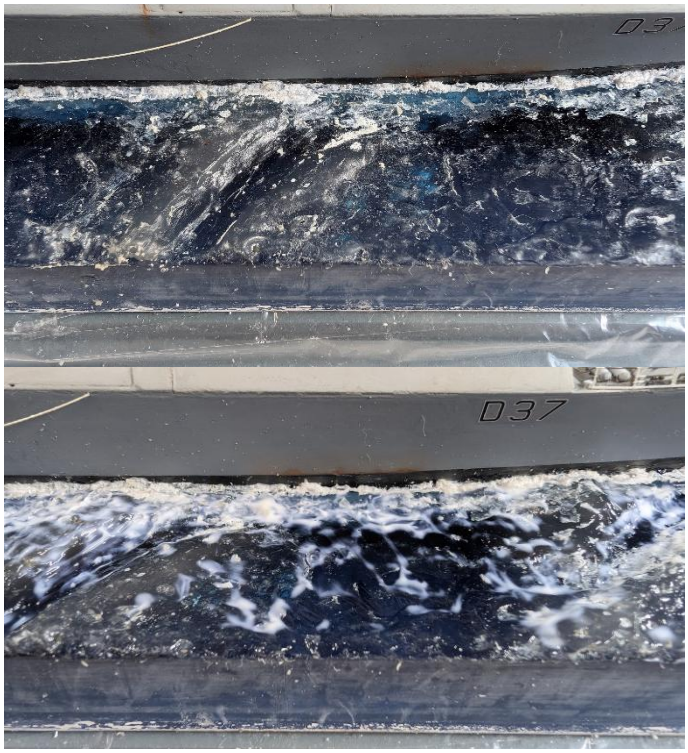
glossy Making Waves. I would rather have left some of the wake waves unbroken, but I felt compelled to disguise their grey appearance. On the aesthetic side, the large amount of bright white distracts the eye from the model.

Vallejo Snow was also used to enhance the ripples around the whales and dolphin. I made a few additions of white paint with fine liner brush, mostly the fine white lines one sees as foam breaks up.

The excessive amount of bright white water after the first application of Vallejo Snow.

Looking at it again, I decided I could not live with the white water as it was. I used VMS Clean Slate rmvr 2.0 and a brass wire brush to remove as much of it as I could, except the inner part of the bow wave, the boundary layer along the hull and the propellor wash. I also used a polishing head in my rotary tool to remove thin layers of opaque film, though I concluded that what I was removing was the Making Waves water surface. There were lots of white or cloudy artefacts remaining, but I thought they would look natural once recoated in Making Waves.

There were lumps of sticky debris in places that resisted brushing off. At this point I had another minor disaster. I started cleaning the surface with 50% alcohol. I had done that on the bare resin surface with no problems, but I neglected to test it on Making Waves. They reacted, leaving white, cloudy surface. Annoyingly, I had started around the pilot whales, where it was hardest to fix. I immediately flushed with water and polished as best I could with cotton buds, but I would need to rely on re-coating with Making Waves to conceal the damage.



Top, surface after removing much of the Snow white water. Bottom, the re-coat with white Making Waves beginning to set and go transparent.

I did a complete re-covering of the entire sea surface with a thin coat of Making Waves applied with a soft paintbrush, with the exception of the undamaged areas forward of the bow wave. I also covered much of the remaining Vallejo Snow, trying to soften the wave foam and give it a gloss finish, but leaving the most disturbed white water uncovered, intending to gloss varnish it. The exception was the propellor wash, which I am pretty happy with, and don't want to ruin.

Once cured it was inspected, and I still felt there was too much white water in the bow waves. On the spur of the moment, I painted over much of the bow wave on both sides with Vallejo Glossy Sea Blue, which I hope I will not regret. This colour is a green-blue, so not the same as the Dark

Bow wave immediately after painting with Glossy Sea Blue.

Mediterranean Blue used for the base, but I felt that a contrast was quite pleasing. I also applied a thin, almost dry-brushed, coat to the trailing side of other large waves, hoping to distract from their grey colour. The paint reduced the white the foam to fringe at the edge of the wave.

Once the paint was dry, I covered it in Making Waves, again applied with a brush, and again trying to smooth out the pits and ridges in the large waves to make them seem less rough. Although the paint was glossy, I wanted to be sure that the waves would have the same high gloss finish as the rest of the water, and the coating should add depth. I also re-coated a few areas where I had found scratches or irregularities.

The whale who lost his dorsal fin and scratches on the surface, both since fixed.

Once cured, the Making Waves over the paint had a quite dramatic effect, creating a crystalline appearance, looking transparent even though it was only a thin layer of resin. Although beautiful (though perhaps looking like clear plastic) this was not quite the desired effect, so I ended up putting back more Vallejo Snow for more breaking wave and to tone down the shine.

After another application of Vallejo Snow white water

Meanwhile I inspected the pilot whales at high magnification and found that only one had lost its dorsal fin. I made one from a scrap of styrene and stuck it in place. It and a couple of scratches on whales were painted NATO Black. Flecks of

After painting and gloss varnish

wave and water material that had adhered to the hull were brushed and scraped off.

Returning to the waves, I felt I had added back too much white foam on the bow waves, so painted some of it in Glossy Sea Blue again! That done, I was reasonably satisfied, and I varnished all the white water with two coats of Winsor & Newton Galeria gloss varnish. I also gloss coated the backs of the whales but later reversed this by giving them a coat of VMS satin varnish, which I much prefer as it gives some contrast from the shiny water.

Once all dry, I gave the rougher waves (but not the white water) a final coat of Making Waves, still trying to smooth the rough surfaces.

That's the water surface completed. I am not entirely happy with how it has turned out, but it is acceptable.

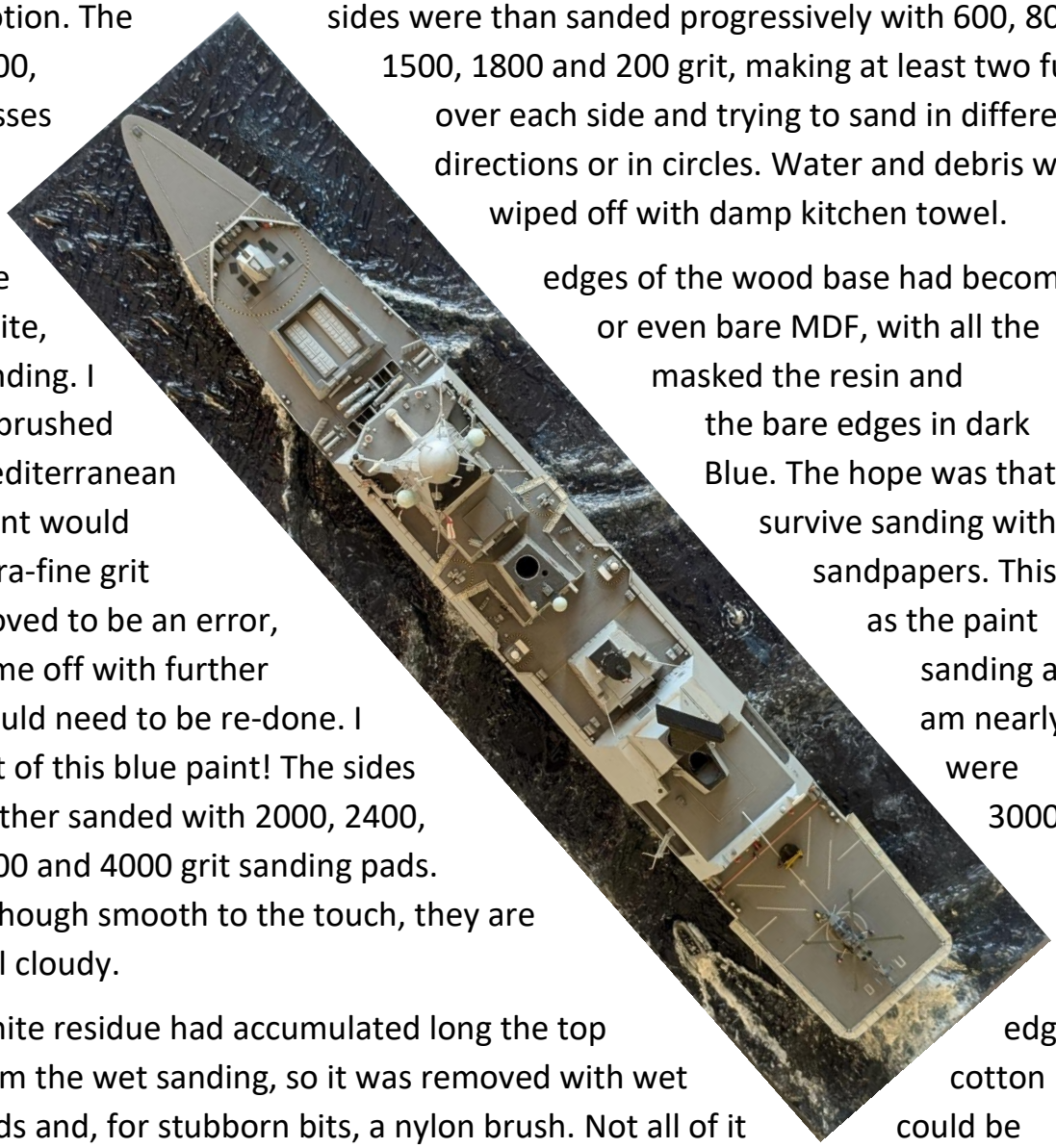
Final steps

Some minor repairs were carried out, and some micro-dusting: inspecting through a magnifier and removing dust, fibres and adhesions with a damp paintbrush, tweezers and a knife for scraping. Unfortunately (again) I knocked one of the wheels off the doors, then lost it as I tried to refix it; and the port boat davit came off completely, the frame disappeared from my fingers, only to be found on my seat, squashed.

The broken davit was repaired, though probably not looking as good as before. The door wheel was replaced with a smaller spare. Ten minutes later I found the original wheel, so I swapped them. In the process a CCTV camera was dislodged, so I re-fitted that too. Sometimes this build feels never-ending.

The dislodged flight deck netting was glued back in place. Hoping that this was the last ever use of these colours, I touched up the netting rails with Wolf Grey and, with trepidation, the deck with Medium Sea Grey, darkened with Panzer dark Grey and mixed with Matt Medium and Glaze Medium. Mercifully, this time I achieved a good match.

I began wet sanding the sides of the ocean. Although the resin had previously been sanded down to 800 grit, I went back to 320 to sand the top edge at a slight angle to remove any small overlap of the wave material onto the resin or protruding beyond it. I used square sanding boards, to present a flat surface and yet have enough overlap for a good grip so I could attempt a circular motion. The sides were than sanded progressively with 600, 800, 1000, 1500, 1800 and 200 grit, making at least two full passes over each side and trying to sand in different directions or in circles. Water and debris were wiped off with damp kitchen towel.



The edges of the wood base had become white, or even bare MDF, with all the sanding. I masked the resin and airbrushed the bare edges in dark Mediterranean Blue. The hope was that the paint would survive sanding with ultra-fine grit sandpapers. This proved to be an error, as the paint came off with further sanding and would need to be re-done. I am nearly out of this blue paint! The sides were further sanded with 2000, 2400, 3000, 3600 and 4000 grit sanding pads. Although smooth to the touch, they are still cloudy.

White residue had accumulated long the top edge from the wet sanding, so it was removed with wet cotton buds and, for stubborn bits, a nylon brush. Not all of it could be removed, and it has probably found crevices in the edges of the Making Waves material, but enough came off to avoid having a white frame around the seascape.

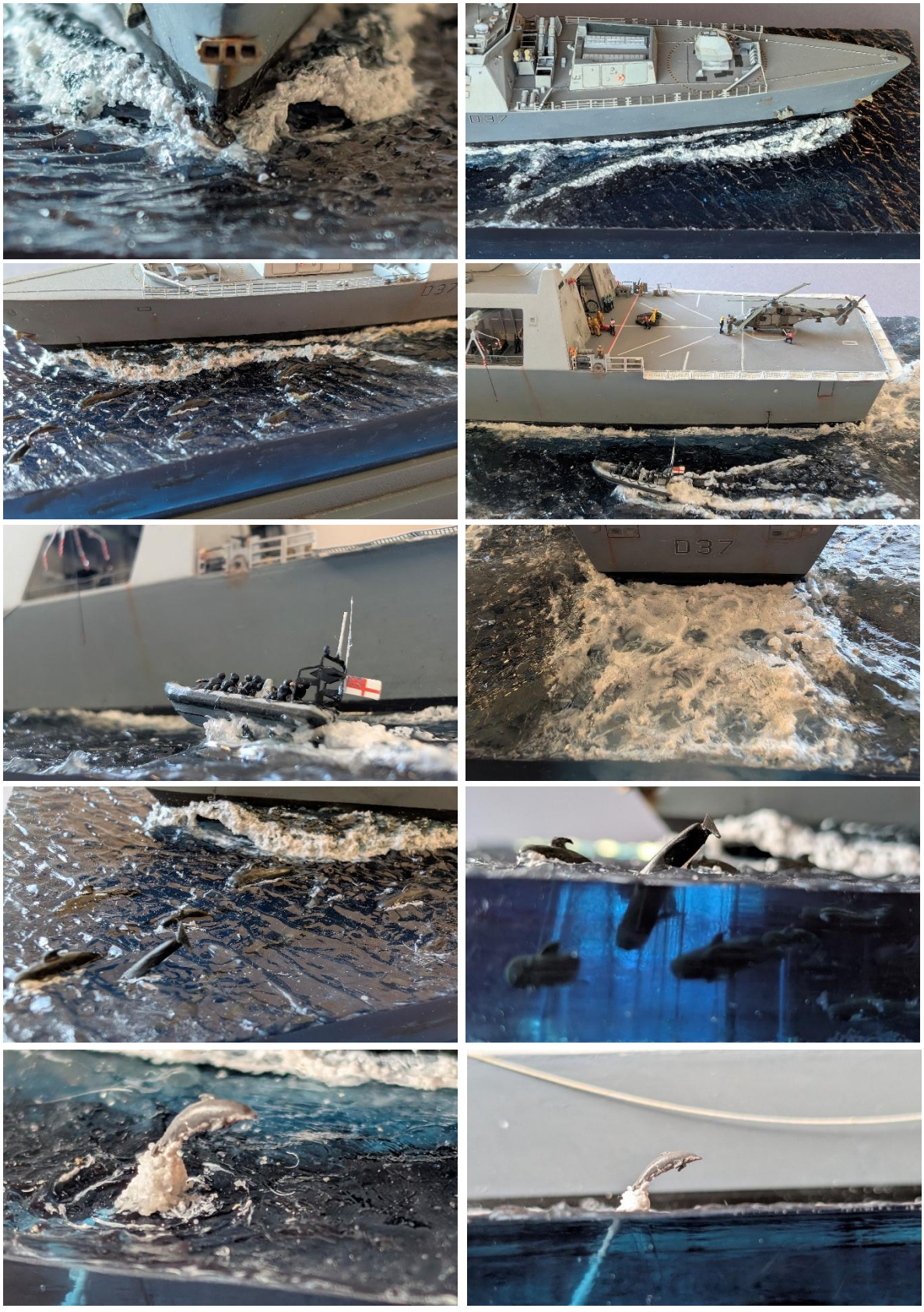
The sides were then polished by hand with PaiBoat Topfinish 2 Ultra Gloss and microfibre cloths. As before, this reached a reasonably shiny surface, but certainly not glass-like. In retrospect I wonder whether I should have sanded

more vigorously with the early coarser grits, as It appears there may be pits and valleys in the surface.

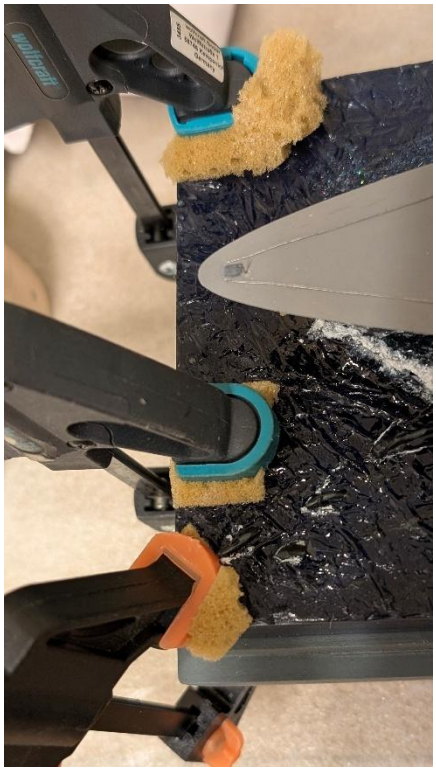
The edge of the wooden sub-base was re-masked, this time all the way round at the same time, as I intended to gloss varnish over the paint. It was sprayed Dark Mediterranean Blue, then with VMS gloss varnish. Some thin white lines had escaped under the making tape when I removed it, so I touched those in with the blue paint on a fine brush; I also painted some white spots on the surface of the resin, which were probably polish hiding in pits in the surface. Having done that, I decided to re-polish the sides using my battery-powered rotary tool. I think that achieved some marginal improvement; it also pulled off a bit of the new blue paint, so the touching-up process had to be repeated.

A lot of experimenting was done to get the right background colour and size for the label, working in MS Word. I decided on a small label and subdued colour that would not draw the eye away from the model. The background is RBG 187-194-205, which is theoretical Light Weatherwork Grey (158-169-173) adjusted with Blue +10 and Luminance +25. Printed at high quality onto glossy photo paper, it was glued onto styrene sheet with PVA and compressed whilst drying to ensure it stays flat. The edges were trimmed and painted red. A strip of styrene glued on the back will angle it slightly upwards. It was fixed in place on the side of the water with blobs of Ultra Glue.

The plastic sheeting covering the lower base was removed. I am glad I protected it because it would almost certainly have got stained or damaged if left uncovered. However, I found that the seascape base has warped slightly, either due to the resin application or the water in wet sanding, and had lifted



by about 1mm at each end. It was necessary to clamp the corners firmly to glue it down. It was stuck down with PVA glue, spread carefully across the



surface of the lower base, but not near the edges so it would not squeeze out, and left to dry overnight.

Noticing that a few areas of the sea surface were dull compared to the ultra-shiny Making Waves finish, either from the cleanup process or varnish, I painted on a thin layer of Making Waves with a soft brush. As usual I got carried away and despite previously declaring the surface finished (and photographing it) I went on and added a coat to most of the big waves, again attempting to smooth them and give less of a broken water appearance.

The radar, again

Now to tackle the repair I have been dreading: getting the radar working again. Fresh batteries made no difference. With the case in place, I can invert the model. Fiddling with it did not get the radars going. I had left in place a cut jumper wire to short a resistor, and connecting that got them moving, but very hesitantly. I was going to have to remove the mechanism. To do that, I needed to remove the scanners and their tubes, despite having glued the tubes of the aft radar. With the model right way up, using a pair of pliers I applied considerable force to the tubes, and pulled out the entire brass shaft! The pulley wheel had come off, along with the brace preventing it angling forward. Inverting the model, I removed the mechanism. I had to cut one of the lighting wires, as it was too short to allow the mechanism out.

With the pulley wheel off the shaft (and mercifully undamaged), I realised this was an opportunity to substitute a longer shaft, so I cut a longer piece of 1.6mm rod and sharpened the ends with a diamond file. Only trial will establish whether it is now too long, or whether the longer shaft will cause the radar scanner to rotate in an even more eccentric orbit, due to its angle. As before, the shaft was thickened by rolling a small amount of Scotch tape around it, to give a snug fit. The wheel was sanded to remove any small catch points that might be nagging on wires and glued in place, smooth side up,

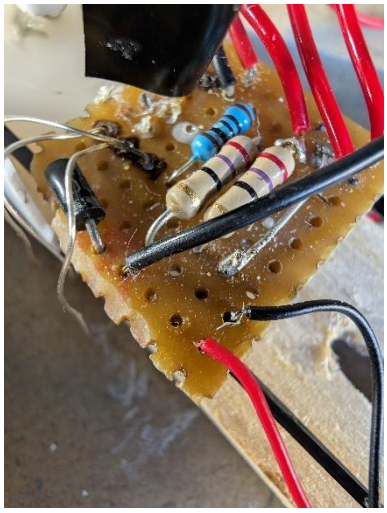
using Araldite Instant. The brace was also glued back in place – it fell off twice so it was eventually secured with JB Weld. The shaft was cleaned up with a knife to remove any glue or tape from the bearing points, and both shafts were re-lubricated with silicone grease. A long jumper wire was soldered in to re-connect the cut lighting wire. Once in place, the motor ran and the shafts turned flawlessly. The lights also worked. With a little fiddling, the unit was re-inserted in the model and screwed down, taking care to keep wires as clear as possible: I suspect fouling on wires may have contributed to the previous breakdown. Two big screws were crudely screwed into the side of the cavity to take the weight of the batteries.

The aft shaft was cut to size. It projected a surprising distance above the mast, partly because the screws holding the electrics unit were not fully tightened before. The radar scanners were pushed on, now much easier at the aft end due to the longer shaft. The scanners rotated, but both quickly opened a gap between the rotating scanner and the fixed support, especially on the aft radar.

When I tried to pull off the aft scanner, the whole shaft pulled up, and I realised that the drive band must have come off. The small plastic support was also broken yet again. I inverted the model and fixed the issue: I cut a 16mm length of tube, larger than the shaft, and slipped it over the aft shaft, to prevent the shaft being pulled upwards out of place again. That meant the plastic support would no longer work. Re-fitting the unit when the shafts did not remain parallel was very tricky. Once done, I shortened the aft shaft by as much as I could with it in place – only about 2mm. I replaced the scanner and ran it- finding that not only did it still ride up,

but it ran at 30rpm, double its intended speed! Something must be shorting one of the resistors. Time to disassemble again.

In the process I knocked off the delicate, previously-broken lightning conductor on the mast, so that will have to be replaced.



The electrics unit was removed again. One of the wooden mounting blocks split again and needed to be glued together and clamped. The gearbox fell apart in the dismounting process and it took considerable fiddling to get it back together and running, taking the opportunity to add silicone grease, which much reduced its noise. But now it was It is consistently running at twice the required speed and I could not find a cause. Shorting either resistor increases speed further, so there is no short. I can only conclude that something was previously braking the system that has now inadvertently been removed, or lubrication has improved. I took out a 27Ω resistor earlier to increase speed[66], so perhaps I needed to put it back?

To my great surprise and consternation, when I tested it the following day, the speed was back to what it should be. I am not sure whether to add the extra resistor in case it speeds up again, or reassemble and see how it goes, risking having to take everything apart again. It still speeds up if the resistors are shorted, and there is nothing visibly touching the drive band. I am mystified – I suppose it must be something going on in the gearbox.

I re-drilled the screw hole in the repaired wooden block, trying to avoid splitting it again.

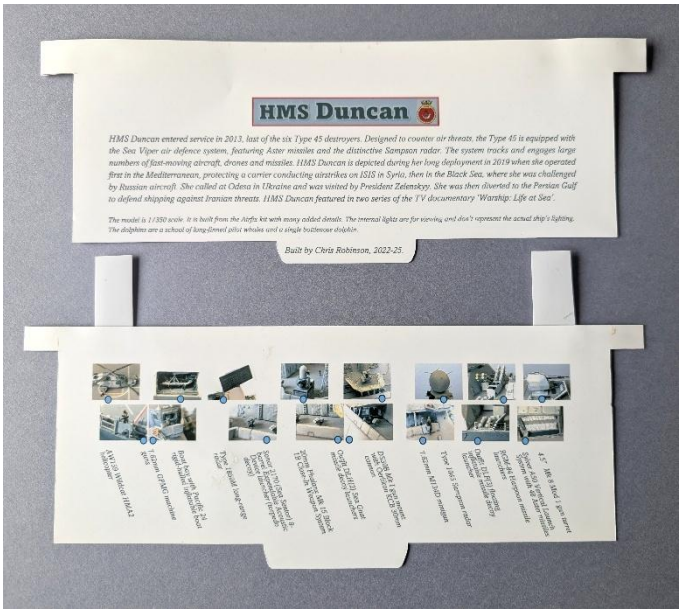
I had immense difficulty in getting the electrics module back into the model, mainly because the holes for the shafts could not be seen once it was part-way in. Between tries, I had more problems with the gearbox coming apart and inconsistent speeds. When tested again, the unit was initially running slow – around half intended speed – then speeded up to the correct speed. Once in position, I found that the wooden base would rock along its length so the exact

[66] See page 125.

alignment changes depending on which screw is tightened. I glued the plastic tube (wire insulation) into the aft radar scanner to prevent it turning without moving the scanner. I extended the resistor jumper wires so they would lie in the switch channels in the base and be accessible once the base cavity was covered over. I trimmed another 2mm off the aft shaft. Once all was reassembled, the radar shafts turned, in the inverted position. I covered over the cavity in the base and moved on.

Pull-out information sheets

The pull-out information sheets were designed in Microsoft Word and printed on glossy photographic paper. The text of the port side descriptive pull-out is on page 5. It took quite a few attempts with different papers and adjustments to the photos in Word before I got the small pictures to print clearly; the main change was to add 20% brightness and shift the colour temperature.


HMS Duncan
HMS Duncan entered service in 2013, last of the six Type 45 destroyers. Designed to counter air threats, the Type 45 is equipped with the Sea Viper air defence system, featuring Aster missiles and the distinctive Sampson radar. The system tracks and engages large numbers of fast-moving aircraft, drones and missiles. HMS Duncan is depicted during her long deployment in 2019 when she operated first in the Mediterranean, protecting a carrier conducting airstrikes on ISIS in Syria, then in the Black Sea, where she was challenged by Russian aircraft. She called at Odesa in Ukraine and was visited by President Zelenskyy. She was then diverted to the Persian Gulf to defend shipping against Iranian threats. HMS Duncan featured in two series of the TV documentary 'Warship: Life at Sea'.
The model is 1/350 scale. It is built from the Airfix kit with many added details. The internal lights are for viewing, and don't represent the actual ship's lighting.
The dolphins are a school of long-finned pilot whales and a single bottlenose dolphin.
Built by Chris Robinson, 2022-25.

The sheets were deliberately printed with wide margins so that I could cut them down to the intended width but leave projections at the top that would run in slot and stop the sheets pulling right out. These cross-pieces were reinforced with pieces of styrene sheet. Tabs were cut in the bottom edges. I then used styrene sheet to make a complicated system of runners that allowed the sheets to slide in and out without fouling each other.

Final, final repairs

That should have been the end, apart from one minor repair. But when I came to re-fit the radar scanners, I found that the aft shaft was once again pressing hard against the forward edge of the mast head hole. It was really hard to get the scanner on, and when I did, it ran hesitatingly for moment then stopped, with forward scanner still rotating. When I tried to remove the aft scanner, the entire shaft pulled out again. I could cry.

The sensible thing to do would be to give up at this point, write off the sunk cost of my time invested in the working radar, recognise that it was never worth the effort and accept a redundant switch in the base. I probably won't, meaning I will come back to it, but I will leave it a while and see how I feel. I am so disappointed.

The build is technically finished, because all that now remains is repair.

I cut two lengths of 0.2mm brass rod (one as spare) as near as possible to 5.2mm long and painted them, in a last hurrah for the Wolf Grey paint. One was glued in place to replace the missing lightning conductor on the foremast. In the process I knocked off another one, so that was found and glued back. Once broken off, these are much weaker because the originals were inserted in holes.

April 2025

That's a heading I had hoped I would not have to use. I'm at the stage now that I just want this project to be finished.

The pull-out sheets and the eight strips of styrene bridging the electrics cavity were removed; fortunately, it was easy to cut them away, slicing through the Bostik glue with knife, though I noted that the styrene runners for the sheets had warped. The electrics module was removed. Apart from the aft shaft damage, the circuit board had broken loose from the wooden base.

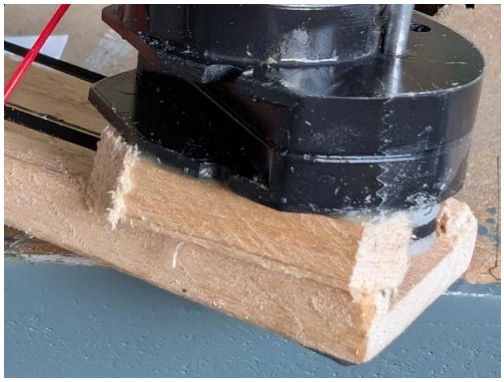
Before fixing anything, I experimented to see whether anything could be improved for smoother running. With the model still inverted in its case, I put brass rods through the shaft holes, noting that as expected, to reach the middle of the aft mast, the shaft needs to angle backwards. Suspecting that the pivot for the aft shaft might be too far aft, I inserted a section of thin plastic ruler and measured the distance between shafts at the level of the base when in position; it measured 12.4mm, which is exactly the distance between the forward shaft and aft bearing point, so no change to be made. The problem might be that the screws have been shifting the base slightly out of position, due to the rough-cut slots in the wood. I will use washers when I re-assemble.

Using a longer brass shaft for the aft radar has not been successful. I decided to revert to the first, short shaft and use a longer piece of plastic tube fixed to the scanner, hoping to put some flexibility into the system. The old piece of tube was easily removed and I drilled some debris out of the scanner before gluing in the longer tube, using 5-minute epoxy. The tube was flexed between my fingers in the hope of softening it.

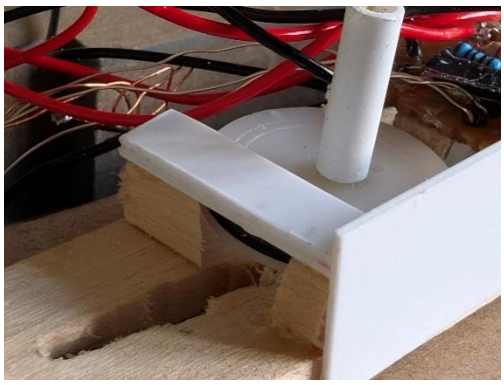
The scanner had been contaminated by finger marks and lubricant, so I resprayed it with Model Air Black and Matt Base. That also hides the white collar that showed clearly if the scanner rose slightly off its mounting when working.

The pulley wheel now contained enough glue residue to fit snuggly on the shaft, so I glued it in place with VMS CA Slow. I fixed it so the bottom of the shaft will not reach the bottom of the hole, so the bearing will be the short length of tube inserted into the socket hole.

The aft shaft was put in place and tested with the belt around it. All ran smoothly. Deciding not to attempt re-installing a brace to hold the aft shaft vertical, I glued the circuit board back on its support with Bostik. Having re-lubricated the shafts, I made several unsuccessful attempts at re-installing the unit. It is extremely hard to see past the unit to locate the shafts in the holes, and after a while the circuit board came off again.



I cut off the protruding ends of the two pieces of wood supporting the motor and gearbox with a razor saw blade, in order to allow the unit more space when inserting it. I noticed that the offcuts included two triangular pieces, which I fixed to the unit base just behind the large pulley wheel, then added a styrene bridge across the two. The intention was to prevent the aft shaft tilting far forward during installation, or the shaft rising out of its socket. Gorilla Glue was used for these pieces, and to re-fix the circuit board.



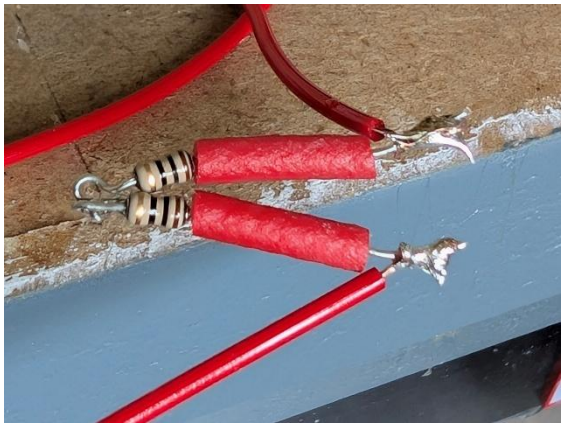
In between, I did a speed test. The shafts seemed to be rotating at about 2.3 of desired speed, 20rpm for the forward shaft. Apart from replacing the batteries, I am past caring about this.

The new bridge piece helped, but re-installing was still really hard, and when I did get it in, the new bridge conflicted with the wooden block for the screw inside the model, and had to be removed! Inserting a screw into the underside of the base as a handle helped, and after much swearing, I got the unit in place. I secured it with screws through two washers, the washers helping ensure no sideways movement due to pressure from the screw heads in the uneven slots. I changed the batteries, then noticed that one of the battery leads had broken off: Aaargh!

I re-soldered the lead. Tested, and… no movement. Turning the model right-side up, the shafts would not turn at all, even with encouragement. Re-fitted the scanners; when properly seated, the aft shaft was still quite long, so I halved the length of the blue tube before pushing it on. In the course of refitting the Sampson dome, I broke off two of the mast fixed lightning conductors and lost one.

Re-inverting the model, I connected the resistor jumper wires I had had the foresight to provide earlier (reducing the resistance by 27Ω). The shafts turned perfectly. Right way up, they turned smoothly and stayed in position, but ran far too fast – about 40rpm for the aft scanner. The problem is clearly that to run the shafts slowly enough, the system has insufficient torque to overcome the braking effect of all the mechanical contact points in system, such as the shafts pressing against the edges of the holes.

The jumper wire allows me to test other resistors. With a 10Ω resistor (still shorting out a 27Ω resistor on the circuit board) the speed reduced to around 25rpm and still ran reliably. Adding a second 10Ω (total of 20Ω) gave a speed of around 19rpm, against a target of 15rpm. Given that the radar still doesn't work at all if I break the jumper for 27Ω, I will live with that. I soldered together two 10Ω resistors and soldered them across the jumper wires.



Once done, the speed had increased again to 25rpm! I tried cutting the jumper wire again, but the radars still would not run with the full 27Ω, so I twisted the jumper wire cut ends together, left them accessible and left it at that.

The lightning conductors were repaired, including another I bent when the case slipped during the multiple inversions. Lightning conductors and the arms of the boat davit were bent slightly into batter shape. Sky Grey and Wolf Grey were given one last outing to paint the new lightning conductors and touch up the old ones.

I went to re-fit the pull-out information cards. The Bostik glue seems to have caused the styrene sheet to expand and warp, but I judged that it would still function. I did replace the reinforcing pieces on the arms of the front pull-out with thicker styrene, secured with PVA glue and clamped. Tamiya Extra Thin was used for repairing loose joins between styrene pieces, but I stayed with Bostik for fixing to the MDF base.

Reinstating the pull-out sheets went without incident. Once the model was upright, I re-measured the radar speed. The first timing showed 16rpm, but it then speeded up to 21rpm. I do not understand the inconsistency. Once all done and on the shelf, I checked again and the aft radar was actually on the slow side, at 12rpm.

And that, dear, long-suffering reader, is it. The model is finished. A photo gallery is in Appendix 9 on page 289. I can move on to my next kit!

Conclusions: What Would I Do Differently?

I enjoyed this project immensely, but I never intended it to take three years, and it dragged at the end. For my next few models I intend to go for something simpler, so I can get more variety and do more actual building.

The Type 45 is an interesting and beautiful design, with its tall masts giving it a wonderful balance and the stealth facets enhanced by the zenithal colour scheme. As work of art, I love the result. I am also satisfied that I have achieved the most accurate model I could, down to fine details.

The Airfix kit has its problems[67], though it can produce good results. I really don't want to be too critical. It is widely said to be much more accurate than its rival by Trumpeter. Airfix attempted an innovative design, but it did not quite work. Fundamental to the problems is the apparent failure to take into account the thickness of the plastic, resulting in all the locating tabs not fitting and the former-and-cladding system for the superstructure not quite going together without thinning the parts. If I were starting again:

- I would not try to paint everything before assembly. There is too much filling and adjusting to do, resulting in repeated re-painting and thick layers of paint. Assemble at least the main components first, then paint. Perhaps leave off the yardarms, to save them getting damaged. Leave the decals until the end, except inside the hangar: constant repainting around the decals left some very poor results.
- My poor painting early on and the varnishing disaster (varnish had gone off and became gloopy) should have been avoided; had I not already done so much detailed painting and decals, I could have stripped it and started again. I have lots of rough surfaces and softened details. Painting over gloss varnish was a bad mistake.
- I am not sure my "zenithal painting" has been entirely successful, and it has added a great deal of complexity to the build, especially when I started painting different colours on two sides of tiny components! Using a darker colour for the hull certainly reflects the appearance of the real thing. There is something about the colour choices that

[67] See Appendix 6 Airfix kit errors

removes the cyan shade too quickly in some of the contrasts – the upperworks look dark and neutral compared to the upper hull sides. More study of colour theory, shades and tones of colour, might be beneficial. Sky Grey and Wolf Grey, the two colours I used most, are quite different; my attempts to mix them did not result in the expected gradation in tone. However, I still think the overall approach was right, and I still believe that shading the surfaces has resulted in a better representation of the Type 45 as it actually appears at sea in the sunshine.

- I would not motorise the radars. The time and effort it took up, and the drill damage to the hangar, are just not worth the novelty value. I am not happy that the radar scanners do not sit squarely on their mountings. On the other hand, I am so pleased I put the light in the hangar, as the detail was otherwise invisible.

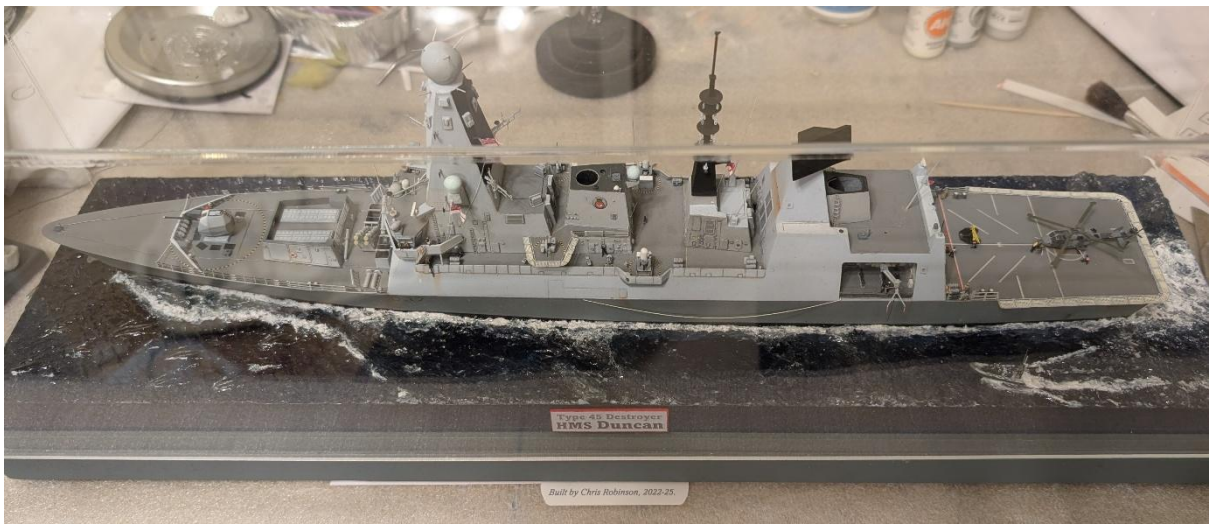
- I saw one modeller's advice to cut off the upper ship's sides so as to enable the aft mast and hangar to be built as a module before mounting to the deck. That would be worth considering, as the need to paint the hangar and boat bay interior resulted in detailing and painting (and decal application) having to be done much earlier than would be natural. Ideally the hull would be built and the main deck attached before any upperworks are fixed and before painting. Gaps need filling around the main deck and there is no point painting before that. Applying the decals too early, and the associated varnishing, greatly complicated repainting or touching up the deck. The advice here is less radical, but keeps the hangar roof open longer: https://www.youtube.com/watch?v=MnAwL882xqA

- I would definitely cut away all the sections of upper decks that are moulded into the main deck part (ie the tops of the formers) and fit them into the upperworks modules as they are built. That allows them to be aligned exactly with the bulkheads with no steps or walls, and all gaps to be filled, before painting. The kit tends to create thick walls around each of these areas because the tops of the modules are too low to form the deck. See https://forums.kitmaker.net/t/1-350-airfix-type-45-hms-dragon-or-is-it-dauntless/227/1 for a description of this technique.

- I should perhaps have replaced the thick bridge wing rails with thinner material, and improved the fittings. Perhaps some other rails, too. Though comparison with photos shows that the thickness is not too bad.
- Filling and sanding the doors after assembly resulted in a mess. In retrospect I would replace the doors, perhaps with Black Cat Models' range of US Navy doors.
- I would replace the brass mesh in the railing nets with a finer plastic mesh, so it is less prominent.
- The lighting conductors I made from wire are too thick, and should ideally be pointed.
- The resin sea was done largely because it was part of the project as I first conceived it but was unnecessary. As good an effect could have been achieved with a painted surface – though the whales and fish do add an unusual feature. Too much colour in the resin makes viewing the underwater wildlife very difficult.

It's been fun. This was my first venture into ship modelling, and only my second proper model since I returned to kit building after over 40 years. I was still learning basic skills. I got a lot wrong, and my own standards got higher as I went along, leading to disappointment with the early work.

I hadn't anticipated how much more complicated and time-consuming ships are than tanks! And that's a modern, stealthy warship with clean lines and freedom from clutter. A battleship, say, would be much more time-consuming.



An advantage of a modern ship is the huge volume of high-resolution photos available online as reference sources, not to mention two TV documentary series dedicated to HMS Duncan. That made it easy, and enjoyable, to look for pictures of every tiny detail. On the other hand, it also led to fault-finding and attempts to model detail or correct kit faults to an unnecessary degree. I have spent many, many hours going through my photo library and modelling finicky details.

Reader, if you are embarking on a similar project, you are in for hours of fun. I hope you get as much satisfaction from it as I did.

Appendix 1 Colour scheme

The official colour for Royal Navy warships is BS381c 676 Light Weatherwork Grey.

Per Encycolorpedia:

BS381c 676 Light Weatherwork Grey

Medium light shade of cyan

Hex #9ea9ad

RGB 158 169 173

RGB 61.96% red 66.27% green 67.84% blue.

HSL colour space #9ea9ad has a hue of 196° (degrees), 8% saturation and 65% lightness. This colour has an approximate wavelength of 486.03 nm.

25% lighter #cbd1d3 25% darker #7a898f (close to Vallejo 70.905 Russian Uniform).

Theoretical nearest equivalent to BS381c 676 Light Weatherwork Grey is Vallejo Model Colour 70.989 Sky Grey which (on screen) looks darker and less blue. Game Colour Heavy Bluegrey 144 looks darker and more blue. Model Colour Blue Grey Pale 70.905 is (to the eye) very close but slightly darker and more blue - Model Air 71.046 Pale Blue Grey is supposedly the same colour. Pale Grey Blue 70.907 is slightly lighter and is Vallejo's stated equivalent to Humbrol 127 US Ghost Grey. Theoretical equivalent of BS676 is Humbrol 166 Light Aircraft Grey which is slightly less blue than BS676.

Paint chart: Wolf Grey 747 looks good for max highlight (or even lighter for extremes in bright sun, try mixing white?). Sky Grey 407 for shaded. Mixes for intermediate shades. 50/50 is close in dull lighting. Ocean Grey shadow colour in dull lighting. Hull has more blue than upperworks. Shadow under the prow as far back as breakwater and above anchor.

Weather decks (should be Extra Dark Sea Grey BS381C-640) Vallejo Medium Sea Grey 114 though can look like Sky Grey 407 in bright sun and get rust tones showing. Grid on flight deck orange brown.

Colour system I used on the model:

Value	Colour	Where applied
4	White with tinge of Wolf Grey	
3	1:2 Wolf Grey, White	
2	2:1 Wolf Grey, White	Main ship's superstructure facing forward
1	Wolf Grey	Main ship's superstructure port side, foremast forward face, bridge face
0	2:1 Wolf Grey, Sky Grey	Default. Port side superstructure near vertical (foremast, funnels)
-1	1:2 Wolf Grey, Sky Grey	Main ship's superstructure starboard side and aft-facing
-2	Sky Grey	Starboard side and aft-facing superstructure near vertical (foremast, funnels, hangar bulkhead)
-3	Pale Blue Grey	
-4	1:1 Pale Blue Grey, Medium Grey	
-5	Medium Grey	
Modifier		
+1	For each of	Sloped more than default (eg main ship's sides) or true horizontal True horizontal Angled almost horizontal Facing forward
+2		Angled facing sun Interior space

Value	Colour	Where applied
-1	For each of	True vertical Facing starboard bow
-2	For each of	Starboard side or stern facing Angled downward or overshadowed
Hull		Starboard & transom Ocean Grey, port side Medium Grey, in both cases add a dash of UK Azure Blue
Weather decks		Medium Sea Grey
Sun		30° off port bow, 60° high

Wildcat helicopter colour notes: Camouflage pattern is BS 381c 637 Medium Sea Grey and BS 381c 638 Dark Sea Grey, in a standard pattern common to all aircraft. The rail antenna is black with three short silver sections. The loop antennas are bright metal. Rotor colours seem to vary but blades are generally NATO green, with red tips on the tail rotor (some photos show red-white-red stripes, suspect these may be a prototype). Rotor mechanism is Medium Sea Grey. Intakes and exhausts black. Black vertical rectangles either side of the FLIR platform. Windows generally appear near-black, as do the grilles either side of the nose and tail. These don't match either side of the nose: two horizontal grilles on starboard side, one with rounded corners, a small vertical grille on port side. Some red details. Yellow warning arrow on door. Dark grey step areas outlined in yellow on roof behind windows and on undercarriage support. White tiedowns attached under nose and to side of undercarriage pod.

Appendix 2 Other observations and research

Crew figures

Modern RN uniform at sea is all dark blue trousers and shirt. Sleeves may be rolled up. Most work at sea done bare-headed but may be blue beret or baseball cap. White Ensign on left arm, white trade patch on right shoulder, rank on front badge. Black boots. Sea boat: very dark green lifejacket and black close helmet. Gunners (if not RM) infantry helmet in blue or army-style tan camo, white anti-flash face cover and long gauntlets, dark blue or tan body armour. Royal Marines army tan camo. Helicopter crew mid green uniform and helmet, tan lifejacket. Medic white tabard with large red cross.

In the Royal Navy Model Ships group on Facebook, Mike Stimson commented on my flight deck scene: “The flight deck would only have the flight crew on it. No fire fighters would be around. Crew would only wear anti flash (long white gloves and hoods, with nose bags up!) at action stations, not flying stations. Most of the crew would be away from the flight deck, for obvious reasons, but there would be an FDO, normally the joss man to bring the helo in to land. No one would be bimbling about in the hangar apart from the flight.

[Me:] What does the FDO wear? White overalls with yellow helmet and tabard? I might add him in conversation with the pilots.

[Mike Stimson:] if I remember correctly, yes. Definitely a yellow tabard with black FDO stencilled on the back. Most probably white overalls now too. Also remember his ping pong bats! but they are probably orange dayglow wands now! I think the helo armourers wore red tabbards, the electrical bods wore green. But I was a proper sailor bud, not a WAFU, just remember them being very territorial about the hangar and flight deck!

[Me:] I have a photo of an FDO on a carrier in white and yellow as above. I relied on [another] photo to model two men in red to undo the helo tie-downs. I'm guessing the one in yellow tabard is the FDO? I found this source but it wasn't much help: https://bootcampmilitaryfitnessinstitute.com/.../a-brief.../

I found a note (from 2009) saying "he's more likely to be the CFD (Captain of the Flight Deck) as Flight Deck Officers wore white overalls", referring to a man dressed as above and wielding flags (on a postage stamp!). The scene is nearly

finished but I will add a CFD/FDO in conversation with the pilots when I've painted him. Tie-downs and the men releasing them yet to be added."

Or as Steve Jones put it more succinctly, "not sure we'd have that many WAFUs awake at the same time!"

Flags

Per a post on a forum by Geoff/Pugwash: White Ensign (the flag, not the model company) sizes go by even numbers:

Function	Number	Fly	Hoist	Fly in 1/350 (mm)
Boat	2	3'	18"	2.64
Sea ensign for frigate/destroyer	4	6'	3'	5.27
Sea ensign for frigate/destroyer	6	9'	4'6"	7.91
Weekday ensign for frigate/ destroyer	8	12'	6'	10.54
Sunday ensign for frigate/destroyer, weekday for carrier (harbour)	10	15'	7'6"	13.19
Sunday ensign for carrier (harbour)	12	18'	9'	15.82

Jack is always one size (number) smaller than the ensign. There is a photo in my references of HMS Duncan flying three different sizes of White Ensign at sea from different halyards simultaneously.

Discussion in Royal Navy Model Ships group on Facebook:

"[Me:] A mix of questions about flags, for a modern RN ship at sea (HMS Duncan, pictured):

1 A variety of White Ensigns seems to be flown of different sizes from every available halyard, with no discernible pattern. Is that right? Regulations suggest a destroyer at sea should display a No 4 or No 6 ensign, 6' or 9' long, but that doesn't seem to be respected.

2 Would the ensigns displayed on one side be mirrored on the other?

3 Signal flags: what is the significance of the signal flags showing in many pictures? If I copy a photo, is that likely to be wrong for another time or place? Is there a common pattern?

4 Are the signal flags mirrored on both sides of the ship? They are only visible from one side.

[Scott Orrible Stephenson (SOS)] As a standard rule of thumb for 99% of situations the following is true

1. Union Jack only flown in harbour or at Anchor. There are exceptions but let's leave those well alone

2. White ensign is flown from the Flight Deck / Quarter Deck when in harbour or entering or leaving harbour

3. White ensign if flown from the main mast when at sea. It is flown from a gaff off the main mast usually the one adjacent to the bridge

4. Signal flags are used before and during RAS, Flying operations , Gunnery Firings, and entering or leaving harbour as required by various regulations.

5. Signal Flags tend not to be repeated on the other side of the ship except for fuelling or Gunnery Firings where you want it as visible as possible .. otherwise signal flags will just be in the most useful or appropriate side

6. At sea the ensign is flown 24/7 but in harbour only between 0800 and Sunset or 2100 whichever is earliest

[Me:] Thanks! The very large ensign in that position does seem to be exceptional, but there are lots of pictures of T45s with multiple ensigns at sea. Having said that, I found this picture with a large ensign in that position; I can't make out what the flag on the starboard side is (Not Juliet: I Am On Fire, I hope). Do signal flags always have their code meanings, or do they have some other significance? Lots of pictures show signal flags, though it can be hard to make out what they are. Is Foxtrot flown for helicopter operations?

[SOS:] Chris the flags can be either International Code or Naval Code

Bravo = Taking on or discharging flammable good (Fuel) or conducting live firings

Alpha = Diving Ops

Foxtrot = Flying Ops

India = getting ready to RAS (I think!)

I can't recall them all as I was a Gunner but if there's an ex RO(T) or POCY in the group they'll know a lot more

I suspect this arrangement has something to do with the other warships she was operating with.. kinda showing off if you like

[John Winn:] it's a Surflot award burgee

[Me:] Found the answer to my own question: Hotel is flown for helicopter operations… No longer sure about Hotel for helicopter operations - only one source says that, and it seems odd that one flag has two common meanings, when Hotel is also I Have a Pilot Onboard.

[Mark A Graham:] I can confirm that flag Hotel is used for helicopter operations on frigates/destroyers, and flag Foxtrot for 'flying operations' on carriers (and naval air stations)

[Harry Aycock:] Here is some official information on the sizes of the various Ensigns for modern Royal Navy Ships. 46cm x 92cm is a boat ensign and is displayed on all Ships Boats and Tenders, it is commonly referred to as a Size 2. Further to this, the 92cm x 184cm is commonly referred to as a Size 4 and 276cm x 552cm is commonly referred to as a Size 12.

Ensign Sizing Chart

Class of Ship	Harbour Ensign	Sea Ensign	Union Flag	Distinguishing Flags	Dress Ship Masthead Ensign
QEC	12	4	10	6	6
LPD	10	4	8	6	6
All Frigates, Destroyers, Protector, Scott	8	4	6	6	6
Echo Class, River Class	8	4	6	4	4
OPV River Class Batch 2	6	4	4	4	4
Hunt, Sandown Class	6	4	4	4	4
All Submarines	4	2	4	3	3
P2000	4	2	3	2	2
Shore Establishments	8		6	6	6
RFAs	10	4	6	6	6

[Me:] I've seen that table, though I also have another one that suggests a No 6 is also permissible for destroyers at sea; but neither is consistent with the photo evidence showing a variety of sizes. Though there are pictures with only a small ensign flying from the foremast gaff, and some with no ensign visible at all.

[Nicholas Moore (NM):] Type 45 at sea flies a size 6. It's on a small gaff yard on the port side of the mast. In your photo that's what the ensign is flying from. There's some kind of electrical box above it, it's hard to see because the gaff is painted black and it's on a black painted last section. Not duplicated to stbd.

Signal flags are size 4. Entering harbour the ship will have its call sign hoisted on one side of the main mast. It may also have its intended berth i.e. SRJ for South Railway Jerry in Portsmouth.

Entering or leaving it will fly Code Hotel. The Answering pennant acts as Code when flying in a hoist with other flags. Code H is hoisted when the pilot comes aboard and is hauled down when he leaves the ship.

Entering harbour there will be a point where the ensign will shift to the harbour position on passing i.e. in Portsmouth it's the Southsea war memorial. The same point is used when sailing to shift to the sea position. When coming alongside, the Jack will be hoisted at the bow when the first line is on the bollard. Jack is hauled down when the last line is taken off the bollard. Jack is not flown at sea.

Alongside a lot of ships will have Code Romeo Yankee flying from an outboard yard so ships will see it and pass with care.

There's more specialised hoists which may be seen but they're only of interest to other ships really.

Also, in your photo, I have absolutely no idea what that massive ensign is for! Hope this helps some.

It's the smaller ensign that's the sea ensign. It's actually flying above the huge one but it doesn't look like it is.

[Me:] The big "battle ensign" is a mystery, but I've seen it on two photos if different T45s. It's tempting to put it on the model, because it looks good! What also puzzled me in the picture is what appears to be a third ensign hanging limp behind the polemast. I didn't even know there was a halyard there.

[NM:] Yes, it certainly looks like there's something there. I don't ever recall seeing a halyard there but my time working with the 45s was during replenishment serials, so my attention would have been on their bridge/signal deck. I never saw a sea ensign there, only on the main mast. Not uncommon to see a 45 with its sea ensign on the outer halyard of its tallest yardarm. I still have no idea what the big ensign is for, though. I can tell you though that in the above photo she's working in a formation with other ships. The striped flag (vertical yellow and dark blue) is Flag G. Flying from a ship it means that she's the guide and the other ships have to station themselves on her and confirm to her manoeuvres.

[Me:] I think Duncan has led NATO standing naval task forces on more than one occasion (see NATO badge in top picture) so, speculating, perhaps she was leading a group on an exercise that warranted battle ensigns? There is at least one photo of another T45 with the big ensign. I'll probably put it on the model just because it looks good and can't be proven wrong. Beyond that, if I were to show her flying Hotel at the dip (though almost hidden by the ensign, as in the picture) indicating intention to fly the Wildcat, and her callsign on the starboard side, would that look silly?

[NM:] She wouldn't fly her call sign at sea normally. It's now mainly a training evolution in the code book to "Hoist ship callsign", designed to test how fast the signal group can be broken into plain language and then how fast the flags can be put together as a hoist and then hoisted close up. It's not beyond the realms of possibility that, on entering or leaving harbour, she may operate her helo but in 40 years I never saw it done personally. Also, in that situation, confusion with Code Hotel (pilot on board) may arise. That risk would probably increase with the commercial shipping that also runs in and out of the same harbours.

The ship may be dressed for dress ship. At sea, you can't hoist your dressing lines but what you do instead is hoist your dress ship ensigns at the highest possible point on your masts. This may also explain what that is on the act mast. Your dress ship ensigns though are just normal size ensigns, so it still doesn't make sense to me unless they're just boasting!! They would still be flying their sea ensign though.

[Me:] OK, I'll forget the callsign. I just fancy having more flags (and using the ones I've paid for!) but not at the expense of accuracy. I'll go with Hotel (not Code Hotel?) for helicopter operations and perhaps also boat recall.

[NM:] That mix of flags would work fine.

[Me:] A bit more info: the top picture came from a set depicting Duncan as flagship of Standing NATO Maritime Group 2 in the Mediterranean in 2018, in company with other NATO ships all flying large ensigns, perhaps for photoshoot emphasising international co-operation. Here's another 3-ensign picture that looks as if it's taken in poor weather, but she still has her NATO shield on the bridge wing so it could be a similar occasion.

[Different sub-thread] Do I take it then that it's unlikely that any signal flags would be flown at sea away from ports, including callsign? Others have mentioned Bravo for live gun firing. Is Hotel flown flown for helicopter flying? I'm going to show the ship's boats in the water so Quebec (all boats return to ship) might be appropriate. But I have no idea what actual usage would be.

[NM:] Yes, ships do use signal flags at sea. You are correct with Bravo, Hotel and Quebec. You will also see longer signals up the mast i.e. you're in charge of manoeuvring a line of ships and want them to turn 45 degrees to port. The hoist would be Turn Port Answer (Answer in signalese means it's a half of something, in this case four full increments of 10 degrees followed by half an increment).

The position of the signal flags also tells you what's happening with that evolution. If the flag is two thirds of the way up it's said to be at the dip. This gives other ships time to read and report the signal. Other ships, on seeing your signal, will hoist the Answer pennant at the dip, meaning they've seen your signal but not ready to carry out the action. When ready they will hoist Answer close up, which means it's hoisted up fully. If there's a line of ships, the ships following you, or out on the beam in line abreast, will repeat your signal so ships further down the line know what's about to happen (dip and close up as for Answer pennant). When your ship is ready to execute the manoeuvre you will pull your hoist close up to the yardarm. To execute the manoeuvre, when your captain is happy to do it, you will hail the hoist all the way down to the deck. The other ships will do the same and that's when you turn. If, however, you were making multiple turns in the same direction by the same amount it's a bit different. When ordered to execute the manoeuvre, rather than hauling down to the deck you only jail down by one third, putting the signal at the dip. Other ships follow suit. Then it's close up when ready, down to dip to execute. Only on the final turn does the hoist come fully down.

So if you saw, say, flag B close up in harbour it would mean the ship was working ammunition (loss or unload) but ammo work is normally done at a special berth well away from anything in case it goes BOOM!! At the dip is working ammunition is paused. At sea, at the dip, is you are preparing for a live fire shoot. Flag goes close up just before the shooting starts. If the shoot pauses (changing gun team etc) the flag is dipped, then pulled up fully when the ship recommended fire. When complete the flag is hauled down.

If you're ever in Plymouth at sea in a yacht or something, you will see the ships undergoing work up, role training etc at work and they use visual signalling (flags or signal lamps) a lot. Most underway replenishment serials are done by visual. This also carried over to real operational work as visual, believe it or not, is a lot faster way to do a replenishment than by voice!!

Sorry it's a bit long but I hope you find it helpful. Also, there's a book you can buy called the International Code of Signals, also known as interco. This is used by yachts, big ships, the Navy etc. Any code group in that book could be used on a flag hoist on a Navy ship, you just have to have Answer as the first flag to show it came from intrrco.

[Me, different sub-thread] Just to add some confusion, here's a picture of Duncan with a large ensign at the high gaff and her callsign displayed. The picture is at sea, in the company of two Ticonderoga-class cruisers.

Yep, his ensign is a bit on the large size. Looks like an 8 or bigger when it should be a 6. The call sign may be up as part of a training exercise for the signalmen. The message group would be passed by radio. The signal guys have to decide the group and then get the call sign hoisted as rapidly as possible, or whatever the group translates to. This evolution can be done the other way too. Over the radio the plain language would be passed i.e. switch on navigation lights. The signal guys have to find the correct group and then make and hoist using signal flags. If the weather is nice and you have ships who know their stuff it's a good bit of fun. The R.F.A. in particular are very good at this stuff and the radio exercises as the comms branch is still full of ex-RN radio operators and the standard of training is very high. There's usually comms training of some type for two or three hours a day of the programme permits. The comms guys also do both the radio room and bridge comms."

HMS Duncan's call sign is GMIC – often flown in signal flags when coming into port.

G

M

I

C

Hangar interior

Observations on colours for the hangar and boat bays: hangar port side has large fume extract pipes under the walkway, appear in natural aluminium colour. Bright red fine pipe below that, above cabinets. Cabinets light grey or white, except leftmost that is red. Red switches above the half-height cabinets. Edge of walkway light grey or white. Railings medium grey (much darker than bulkheads etc). Medium grey machine near hangar door. Console and boxes to right of cabinets white or very light grey. Walkway deck dark grey. Helicopter mover darker than floor. Another red cabinet between steps and door on port side. Chrome opening wheel on internal door. Hanging fluorescent lights. Black pipe vertical near back of hangar and horizontal near roof. Yellow gantry crane.

GPMG & Minigun positions

The foredeck GPMG positions seem to be raised semi-circular platforms as depicted in the kit, with five hip-high armour plates. My guess is that the platforms rotate and are depicted facing inward in the kit – I have only one picture showing the platforms without the armour, so they are normally removed and stowed when not in use. Or, perhaps more likely, do the plates fold up from the “platform” leaving the gunner standing on the deck? The plates are raised a little off the deck. There is a black steel frame inside and black post for the gun.

The M134D minigun is 80cm long overall, with a 56cm barrel. Measuring a photo, the barrel diameter is around 8cm. In scale, those are 2.3, 1.6 and 0.23mm. Could be depicted as most of the breech area being another cylinder atop the barrel, then the rest a rectangular block. Handle seems to be in addition to those dimensions. The upper cylinder if offset to the left. The ejector with the discard tube attached is a cylinder bottom left of gun. The mounting is some way outboard. The discard chute is just under 1.5 times the bulwark height.

Antennas and details

After 2019, in the 2022 refit, the “bell” on a new sponson was added on the foremast front, the Shaman AS-4293A C-ESM acquisition antenna, and another above the hangar door. The C-ESM equipment has currently been retrofitted to 4 of the Type 45s (Daring, Dauntless, Defender and Duncan). Known as Shaman in the UK. This included the installation of AS-4293A acquisition antennas, AS-4692 UHF/VHF direction-finding antennas (a new bulge on the polemast), AS-3202 HF freeboard antennas and below-decks cryptology equipment. This provides a modern SIGINT capability.

Ladders seem to be painted a duller grey than the surfaces they attach to. Most ladders do not project above the deck they lead to.

Wake and waves

Article on wave patterns by Donald C Simon:
https://1250scale.com/WavePatterns.htm

From that site:

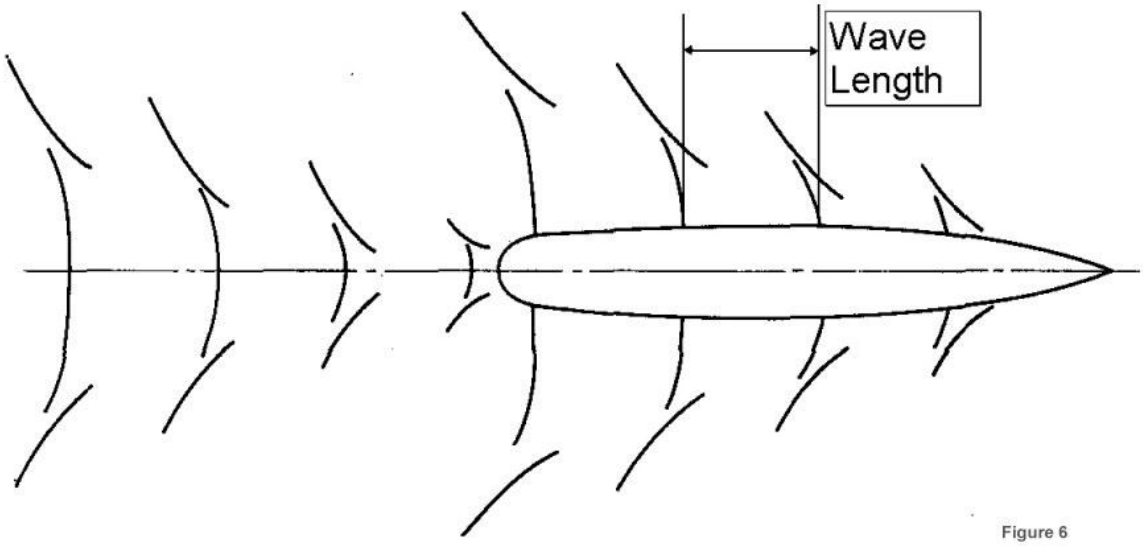


Figure 6

The transverse wave lengths for a given ship speed are:

Speed	**Wave Length**	
5 kts	13 feet	1.132 cm in scale
10 kts	50 feet	4.354 cm in scale
15 kts	113 feet	9.841 cm in scale

The wake of a ship is always 19.47° from centreline, per Lord Kelvin

The inside of the V (of total opening 39° as indicated above) is filled with transverse curved waves, each of which resembles an arc of a circle centered at a point lying on the path at a distance twice that of the arc to the wake source. This part of the pattern is independent of the speed and size of the wake source over a significant range of values.

External references

The Facebook groups Royal Navy Model Ships and 1/350 & 1/400 Plastic Model Ships have been invaluable as sources of help and inspiration. Many thanks to all who have helped me there.

A series of videos by another modeller, ModelKitStuff, building the same kit was useful: https://www.youtube.com/watch?v=jtk1q9lEFH0 .

I relied heavily on the article on wake patterns by Donald C Simon at https://1250scale.com/WavePatterns.htm and its linked photos in doing the waves and foam on the water surface.

The Haynes “Owner’s Workshop Manual” guide to the Type 45 Destroyer by Jonathan Gates (J H Haynes & Co Ltd, 1st Edition 2014, ISBN 0857332406) is useful for background and technical details but it covers only the ships as they first entered service, and relates heavily to HMS Daring as fist in the class. It has relatively few exterior pictures and their low resolution makes it hard to pick out details.

The Channel 5 documentary “Warship: Life at Sea”, seasons 1 and 2 following HMS Duncan on her lengthy 2018 and 2019 deployments respectively, were very useful and drove me to choose Duncan as the model subject. Screenshots provided excellent reference for minor details.

I built up a huge library of reference photos from online sources I cannot acknowledge individually.

Appendix 3 Weapon systems

Sylver A50 Vertical Launch System with 48 Aster missiles

RGM-84 Harpoon launchers

Mk 8 Mod 1 gun system with 4.5” gun

DS30B Mk I small-calibre gun system with Oerlikon KCB 30mm cannon

Phalanx Mk 15 Block 1B CIWS

M134D minigun

Outfit DLH(2) (Sea Gnat) decoy launchers (01 deck near miniguns)

Outfit DLF(3) floating inflatable decoy launchers (tubes on foredeck)

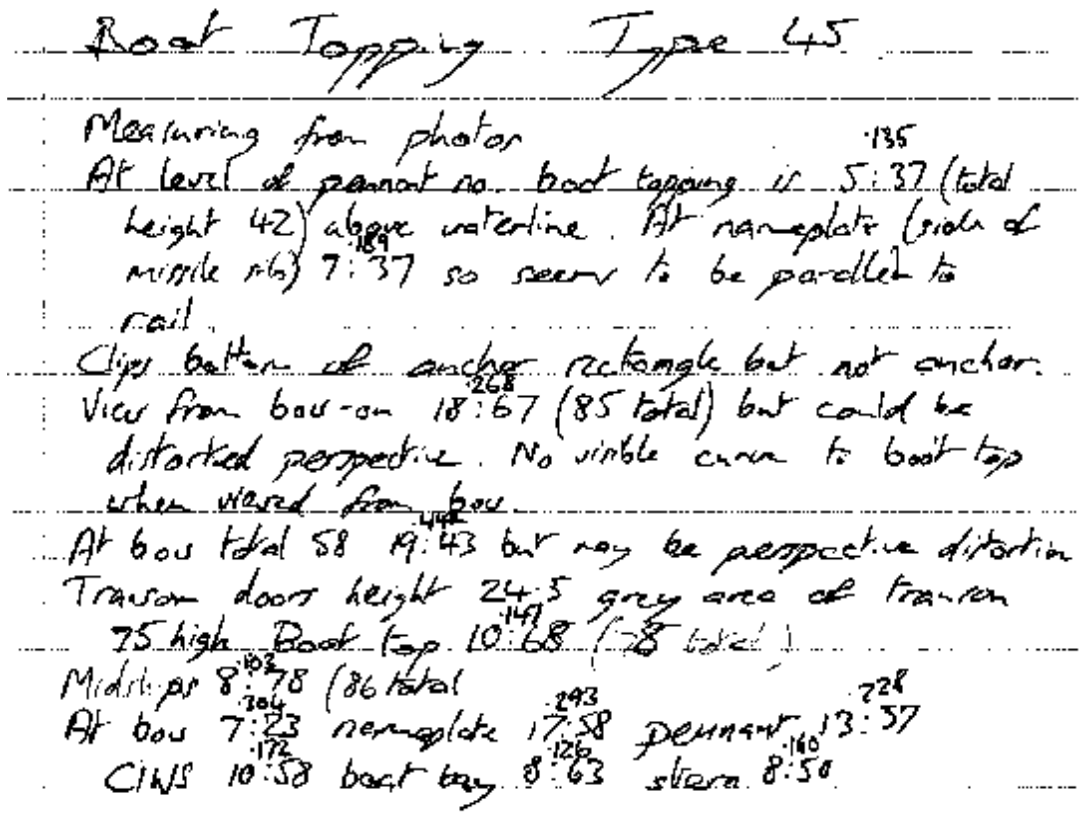
Sonar 2170 (Ultra Maritime Sea Sentor) Expendable Acoustic Device torpedo defence system incorporating 8-barrel Expendable Acoustic Device launcher

The Ultra 2500 series electro-optical directors on the ends of the bridge roof are used for directing the 30mm cannons and they also form part of the GSA.9 system that controls the 4.5” gun

GPMGs

Per the TV documentary, .50 cal machine guns (on bridge wings in place of GPMGs).

Boot topping measurement notes



Boot Topping Type 45

Measuring from photos

At level of pennant no boot topping is 5:37 (total height 42) above waterline. At nameplate (side of middle rib) 7:37 so seems to be parallel to rail

Clips bottom of anchor rectangle but not anchor.

View from bow-on 18:67 (85 total) but could be distorted perspective. No visible curve to boot top when viewed from bow

At bow total 58 19:43 but may be perspective distortion

Transom door height 24:5 grey area of transom 75 high. Boot top 10:68 (28 total)

Midships 8:78 (86 total

At bow 7:23 nameplate 17:58 pennant 13:37

CWS 10:58 boot top 8:63 stern 8:50

Door details notes

All doors seem to have a black 2 on them near the top?

Both doors on back wall have windows. Left one has red sticker to right of window. ~~the~~ Right one has wheel, red corner top right, white notice right of window.

Starboard door has window.

3 doors around the forward uptake (port side) have wheels. Under the bridge wing starboard, 1st of four doors (from forward) has a wheel, ~~third a window~~ NO!

Midships, ~~starboard~~ side, 2 doors, forward one has window.

Across the forward face of the hangar/search radar block, 2nd door from left has window and wheel.

Foremast door onto bridge roof has window. So does 1st door from left on rear of foremast/ ~~uptake~~ block

Below bridge on front, both doors have wheel and red corners on inner corner

Right door onto hangar roof has wheel

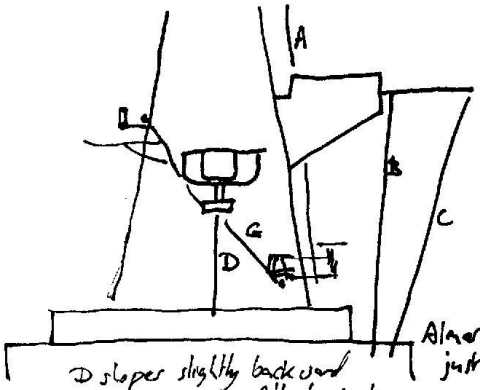
Port side, foremast, 1st door aft of the ladder has a window (two boxes above door)

Lift doors are plain, divide down centre. Door next to it has window.

~~Behind forem~~ Rear of forward uptake block, left door wheel, right red sticker.

Halyard notes

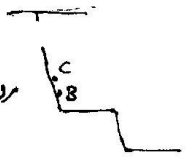
Halyards



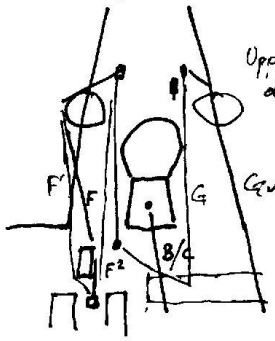
G diagonal seems to be thicker than others? Runs from point ~~just~~ below ~~[illegible]~~ nav radar sponson to point on side of mast just above and right of passive detector, snagging on search radar sponson, then back down to bridge wing

Halyards converge

Almost meet at point just behind end of bridge windows



D slopes slightly backward as it ascends. Attached at aft end of platform.



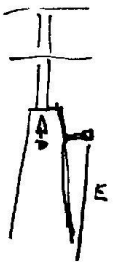
Upper points level with each other, just above passive antenna

Gvertical

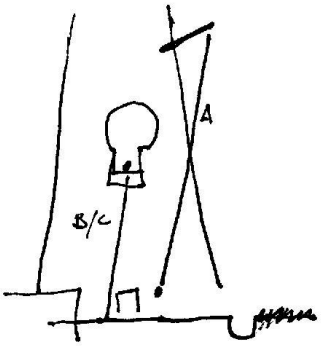
F catches one way or the other on the ventilator

From point between ~~[illegible]~~ 2 doors

Sometimes runs straight up to top box (F^2).

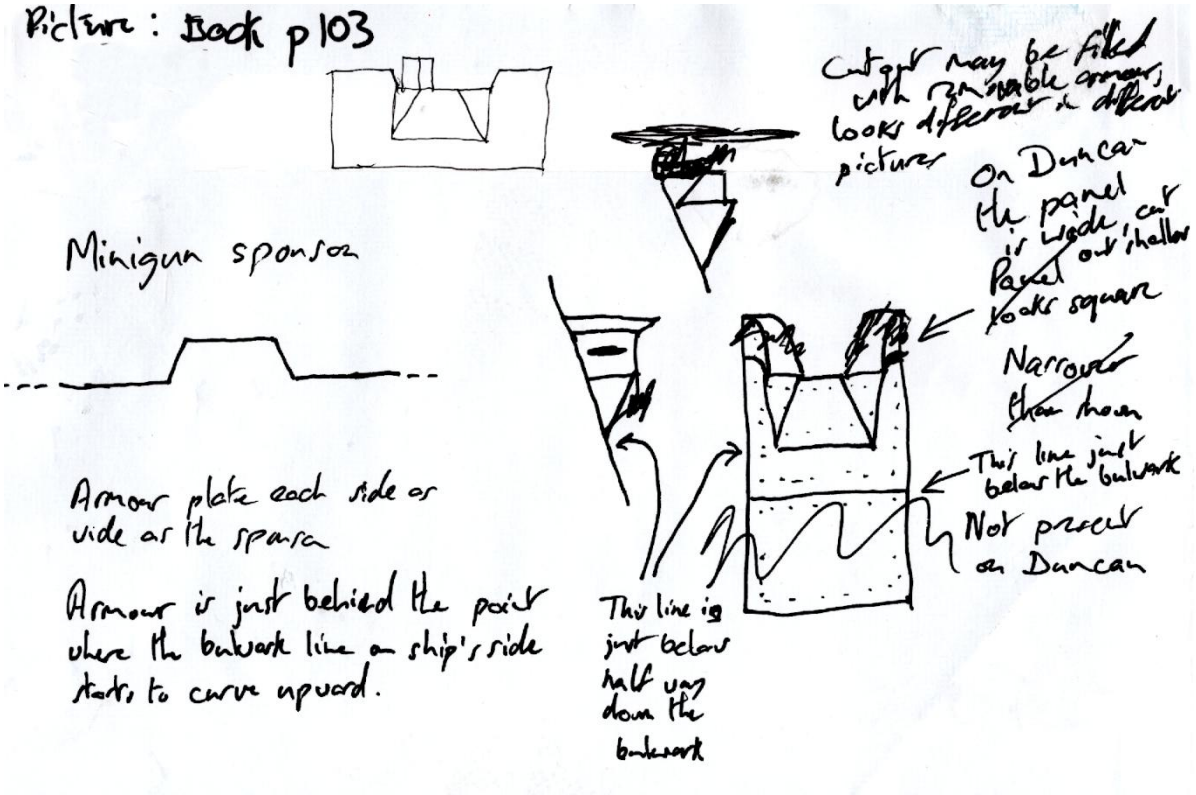


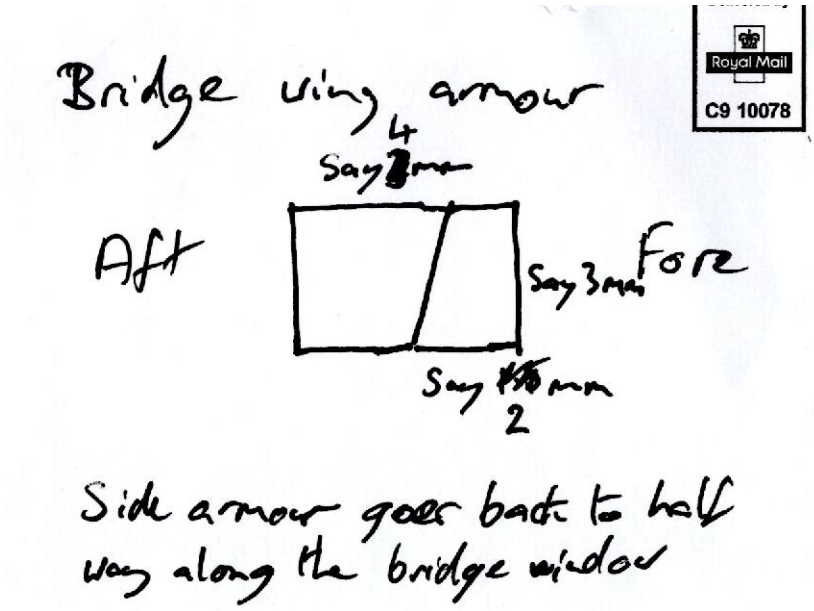
Secures to point on bulkhead just top right of ventilator, central.



A secures to point on bulkhead slightly above, and to the right of, the door, level with the ladder opening.

Sketches for minigun position and bridge armour


Picture : Book p 103
Minigun sponson
Armour plate each side or side of the sponson
Armour is just behind the point where the bulwark line on ship's side starts to curve upward.
On Duncan the panel is wider and shallower
Narrower than shown
This line just below the bulwark
Not present on Duncan
This line is just below half way down the bulwark



Royal Mail
C9 10078

Appendix 5 Photo-etch yardarm details

The antenna layouts on the yardarms are not symmetrical port-starboard, as the WEM PE set depicts them. A substantial strut projects forward (square to

the yardarm) from the front of both aft yardarms, mid-way along. On the port side a substantial up-down dipole is at the end of this strut with a parallel D-wire, forming a “bow” shape. The Airfix kit depicts this a solid piece of plastic. The fore port and aft starboard yardarms have black “mushrooms” on them. Three of the arms have white cylindrical devices on them, which are flat in the PE set. The layout is, from inboard to outboard:

Forward pair:

Starboard: top: fine antenna with white conical cap close inboard (in the PE set) – white cylinder, say 1mm tall by 0.5mm diameter – tall thin antenna say 10mm – gap – short antenna say 4mm (in the PE set)

Port: top: white cylinder – long gap – black mushroom – short antenna on the end, say 4mm – matching the one on the starboard side but the PE version needs to be moved further out and reversed.

Aft pair:

Starboard: top: black mushroom – white cylinder – long gap to end. Forward projecting arm, not as heavy as on port side, with upward antenna (say 4mm) part way along it. Underneath: fine antenna hanging from middle of the lower array, say 4mm, looks more substantial in some pictures than others.

Port: top: medium height & girth antenna say 5.5mm – short antenna say 2mm – long gap to end. D-shaped antenna on forward arm level with the short antenna.

On both sides (aft pair) the downward projection just inboard of the end should not be there.

The spade that fixes to the mast face is chamfered back towards the mast surface.

The grid arrays below the arms should be angled slightly upward to outboard, but it is impossible to bend the PE parts in this way because the grids are merged with the supports in the WEM set.

Appendix 6 Airfix kit errors

As mentioned in the text, not including fit issues:

1. Waterline cut-off is too high by estimated 3mm at the bow, so the waterline version of the model does not have enough freeboard. The difference appears less at the stern, where the true waterline should be only 1mm lower. The boot topping should be about where the kit waterline is, but curving upward at the bow and possibly also at the stern – the kit painting instructions do not show this upward curve. To achieve the right amount of boot topping on the transom, either the boot topping on the sides has to slope up. I suspect the kit waterline is too high on the transom. The prow may be too high, ie the bow may slope upward more than it should.
2. Wrong position of the starboard anchor – about 4mm too low and 9mm too far forward. Along with the nearby hawse-hole and seamanship door.
3. The cut-out for the bow anchor is bit small and bit low, but I found impossible to change. The hawse-hole above it on both sides is too low and too far aft.
4. The prominent ridge running around the top of the foremast should not exist on any ship except HMS Daring, and for HMS Daring it is far too prominent: it is a flat piece of metal in the horizontal plane.
5. The lightning conductors on and below the Sampson dome are too thick and too long – should probably be 5.2mm long, not 8.5mm as per the kit.
6. Not an error for HMS Daring, but all ships other than Daring have flat watertight doors, not the ribbed doors depicted in in the kit.
7. Kit bridge windows looked a bit too small and too oblong compared to photos of the real ship (ie should be squarer).
8. The “chin” frame under the centre of the bridge (sometimes supporting a container for electronic systems) is not depicted.
9. The badge decal to go below the bridge rail is far too large.
10. Corrections to kit bridge roof layout: the long antenna base is too far back. It should have a flat, square plinth mounted just above the angle of the windows. There is a matching base starboard side with the funny-

shaped thing in it (high point to aft). Wrong position in kit. The smaller dome (INMARSAT antenna) should be slightly further forward – it overlapped the large (METOC) dome (note INMARSAT antenna dome was replaced by around 2016 with a smaller version). “Mushroom” antennas omitted. The “rugby ball” Ultra 2500 electro-optical directors at the ends of the bridge roof are far too large.

11. A support brace should run from the rail up to the bridge wing just forward of the aftmost angle in the bridge wing.
12. The bridge wing ladder (moulded onto the foremast part on each side) is about six feet away from the bridge wing!
13. On the starboard side of the foremast unit, athwart the funnel, the moulded details – ventilators, door and ladder – are all too far forward. This shows up because the ladder is well forward of the gap in the PE railings on the deck above, which are correct. The ventilator close to the gun platform should be much larger, and everything else shifted aftward.
14. Blast deflectors for the Harpoon launchers are the wrong type for the T45 (same error in the WEM photo etch). The T45 uses higher-sided boxes with a level top edge and an internal plate at the end to deflect the blast upwards. The Harpoon launchers and blast deflectors are far too big overall, comparing aerial photos to the model.
15. Airfix was not wrong to put life rafts on the foredeck near the bridge bulkhead – very early photos of HMS Daring and HMS Dragon show them there – but they were replaced when the inflatable decoy system was fitted and the single life raft mounts elsewhere were doubled. Did they have the blast deflectors behind when there were life rafts there, as the kit shows?
16. Life raft containers in the kit are three different sizes!
17. Minigun positions below the bridge wings (and the guns) are entirely omitted.
18. Armour plate around the GPMG positions on the bridge wings is not depicted.
19. 8-barrel Expendable Acoustic Device launchers omitted.

20. Omission of the pagoda-like antennas (bi-conical dipole UHF antennas) on either side of the mainmast.
21. The aft antenna dome (believed to be the satellite TV receiver), attached to the main funnel, is too small and the wrong shape, according to all the photos I have – it was an early type, changed around 2014. Replace with a 5mm sphere. The domes either side of the foremast look slightly the wrong shape – should be more round, less tall.
22. The starboard fairlead on the foredeck should be moved forward of the two small bollards. The aft starboard fairlead on the flight deck is too far forward, and should be moved back to match the port side – as it is there is no room to fit the GPMG shield. The GPMG shields are not supplied in the kit.
23. The two GPMG platforms on the foredeck are not normally there in this form. At sea or in home port they are normally removed entirely. In use, they become five-sided armoured enclosures for the gunner.
24. The kit depicts the Outfit UAT Mod 1 R-ESM (Radar Electronic Support Measures) receivers, the eight sensors around the foremast with pyramid-shaped projections. These were replaced by 2015 with the UAT Mod 2 receivers, without the pyramids and with boxes on the "diagonal" positions.
25. The barrel and its support frame on the Phalanx CIWS are too short and the wrong shape; the FLIR equipment on the left side of the radar cylinder and the magazine slung under the gun are missing.
26. The 10m HF whip antennas are a little too short, too fat and the wrong shape. The locating hole for the one on the hangar roof is 4mm too far forward: the antenna should be close to the aft rail.
27. The "picnic basket" equipment on the deck behind the foremast is in slightly the wrong place, and at the wrong angle.
28. The painting instructions are hopeless regarding the areas of the superstructure to be painted black.
29. The sirens on the front faces of the radome sponsons, either side of the foremast, are omitted.

30. The blobs representing the loudhailers and Aldis lamps are in the wrong positions on the bridge wings.

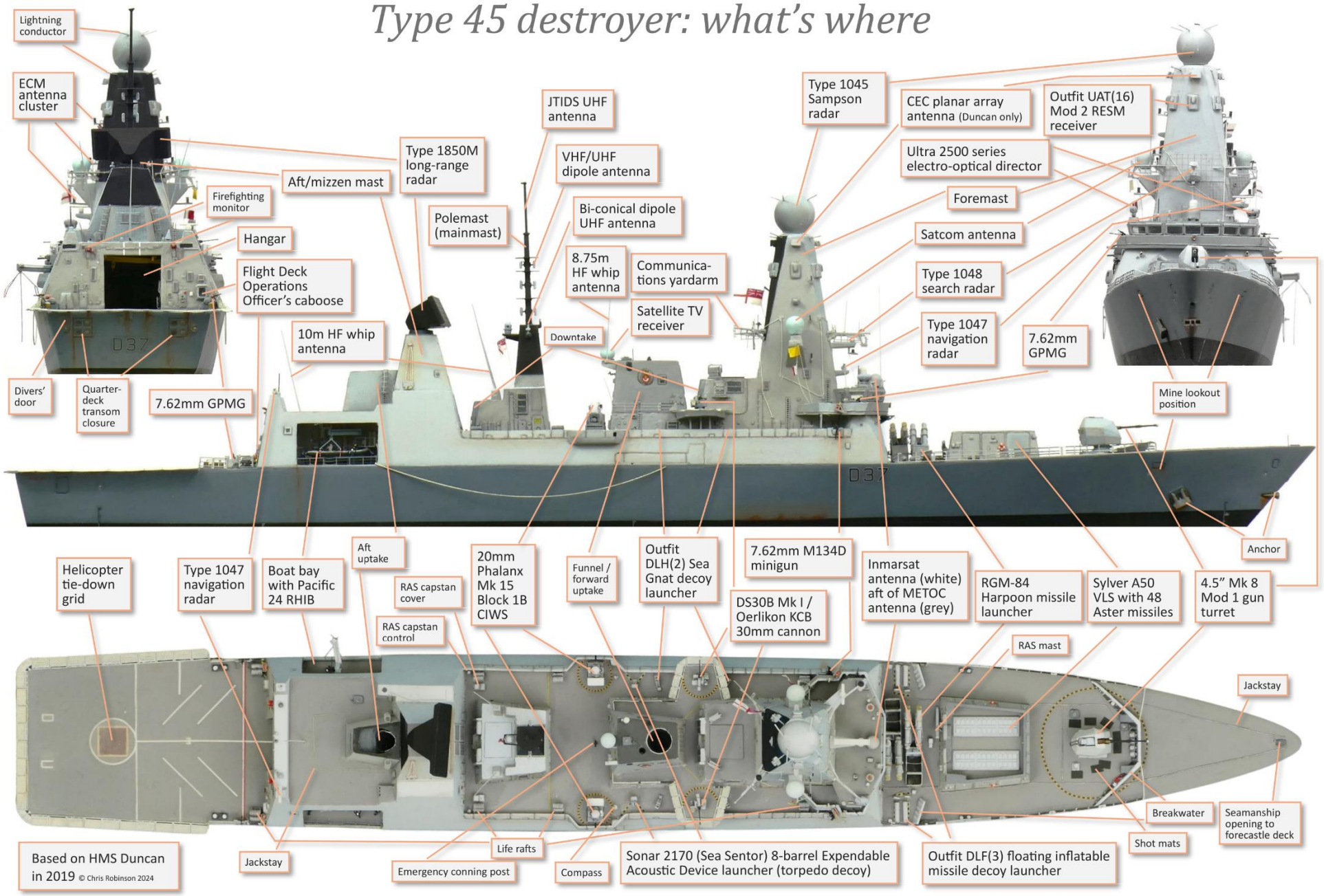
Appendix 7 White Ensign Models photo-etch errors and omissions

1. Foremast yardarms are much simplified with many antennas and other features omitted, some non-existent features, a false assumption that port and starboard are symmetrical and the grid arrays are not separate so cannot be angled forward (see *Sketches for minigun* position and bridge armour
2. Appendix 5 Photo-etch).
3. Details missing on the bridge roof including the “mushrooms”; mushrooms also needed on the yardarms.
4. Blast deflectors for Harpoon launchers the wrong kind for Type 45s. The T45 uses higher-sided boxes with a level top edge and an internal plate at the end to deflect the blast upwards.
5. Chin frame under the bridge omitted. Similar frame on hangar bulkhead on some ships in the past.
6. Four CEC Planar Array Antennas at top of foremast, for HMS Duncan only.
7. Life rings far too chunky – the holes need to be drilled out. They don’t fold together well.
8. Helicopter mover is the wrong type. Should be the Douglas RAM Handler.
9. Lots of omissions: flat doors, ventilators, armour plate for GPMG positions, minigun positions and guns.
10. Locking wheels for watertight doors would be nice.
11. The name plates for either side of the missile silo are far too large.
12. Railings are not bad, but don’t distinguish between the metal bar type and the tensioned wire type.
13. There are no instructions for several sections of railing, including the railings for the flight deck. I assumed that the side that is upward on the fret is the top, when one of the two lengths in fact needed to be turned over to mirror the other. Which way round it goes on matters, but is unclear.

14. The frames on the aft of the Pacific 24 sea boats are far too large. A man standing in the boat stands well above the frame height. Same applies the Atlantic Models PE in their Sea Ceptor set.

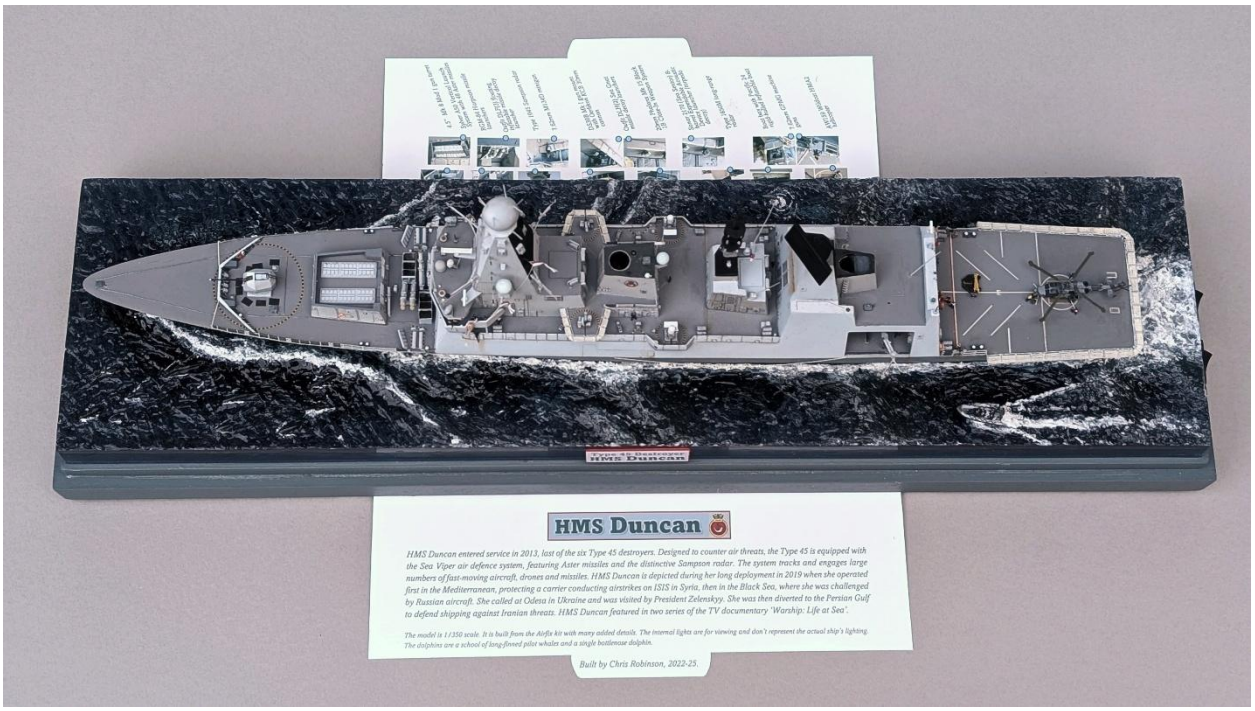
The set referred to is WEM 1/350 Type 45 Destroyer (Airfix) (PE 35166). The Atlantic Models HMS Daring Type 45 Destroyer Detail Set (ATEM35008) seems to be an expanded version of the White Ensign set and has most of the same issues.

Appendix 8 Type 45 What's Where Diagram



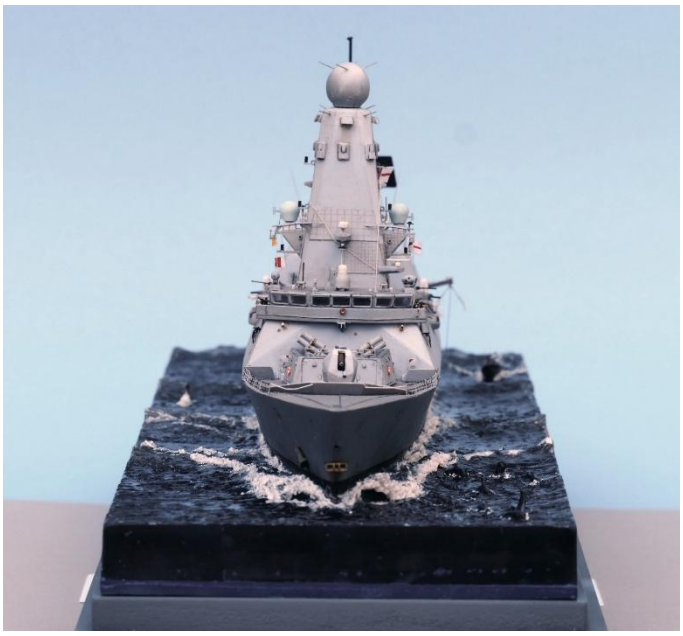
Appendix 9 Finished photo gallery

Sea and sky backgrounds added in software

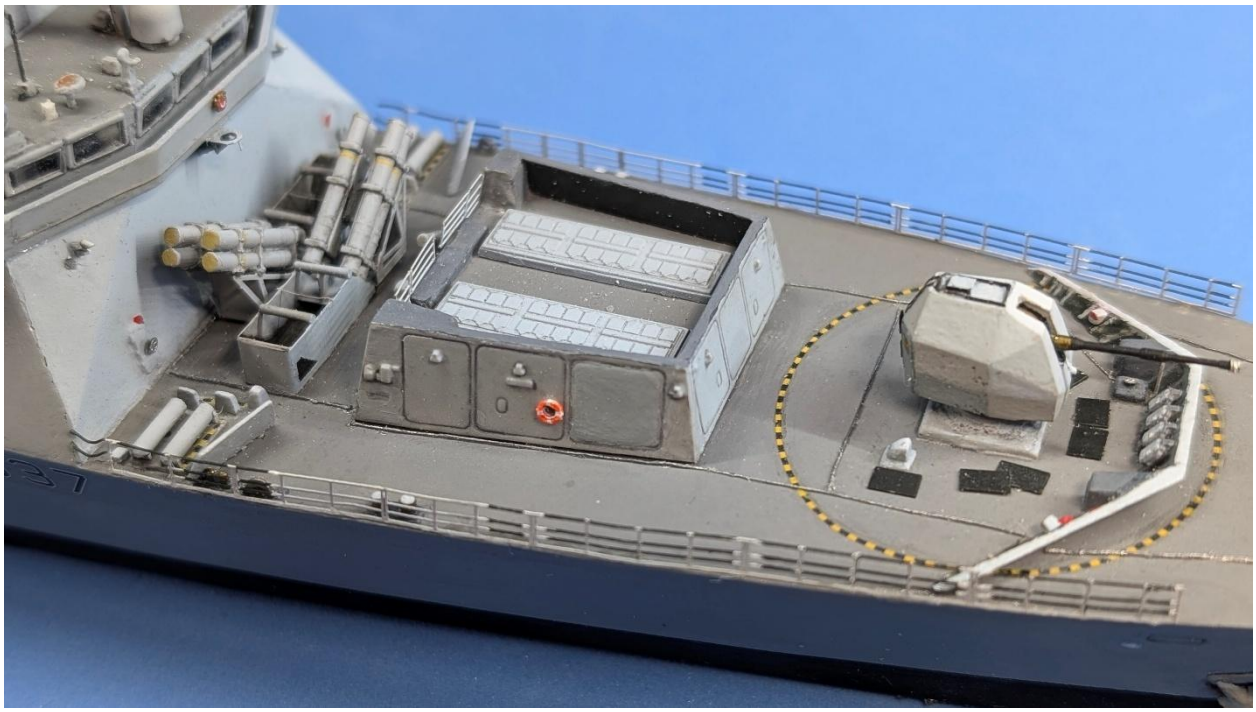

HMS Duncan
HMS Duncan entered service in 2013, last of the six Type 45 destroyers. Designed to counter air threats, the Type 45 is equipped with the Sea Viper air defence system, featuring Aster missiles and the distinctive Sampson radar. The system tracks and engages large numbers of fast-moving aircraft, drones and missiles. HMS Duncan is depicted during her long deployment in 2019 when she operated first in the Mediterranean, protecting a carrier conducting airstrikes on ISIS in Syria, then in the Black Sea, where she was challenged by Russian aircraft. She called at Odesa in Ukraine and was visited by President Zelenskyy. She was then diverted to the Persian Gulf to defend shipping against Iranian threats. HMS Duncan featured in two series of the TV documentary 'Warship: Life at Sea'.
The model is 1:350 scale. It is built from the Airfix kit with many added details. The internal lights are for viewing and don't represent the actual ship's lighting.
The dolphins are a school of long-finned pilot whales and a single bottlenose dolphin.
Built by Chris Robinson, 2022-25.

Type 45 Destroyer
HMS Duncan

Type 45 Destroyer
HMS Duncan



D37



D37

D37

D37

Type 45 Destroyer
HMS Duncan

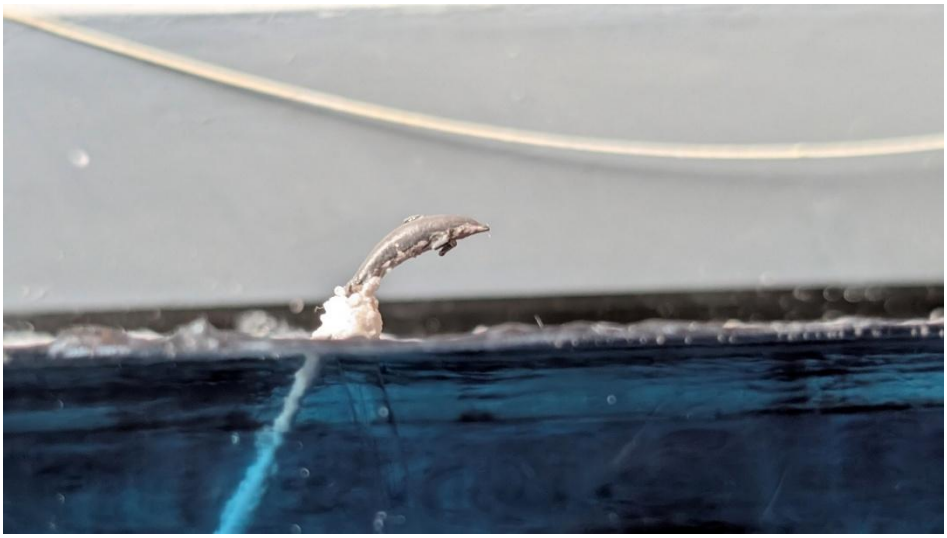
037

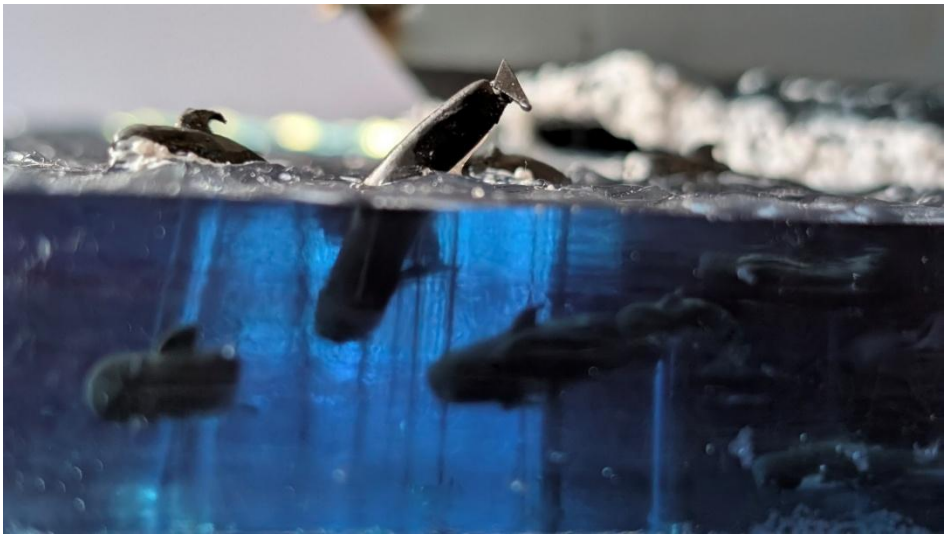
ROYAL NAVY

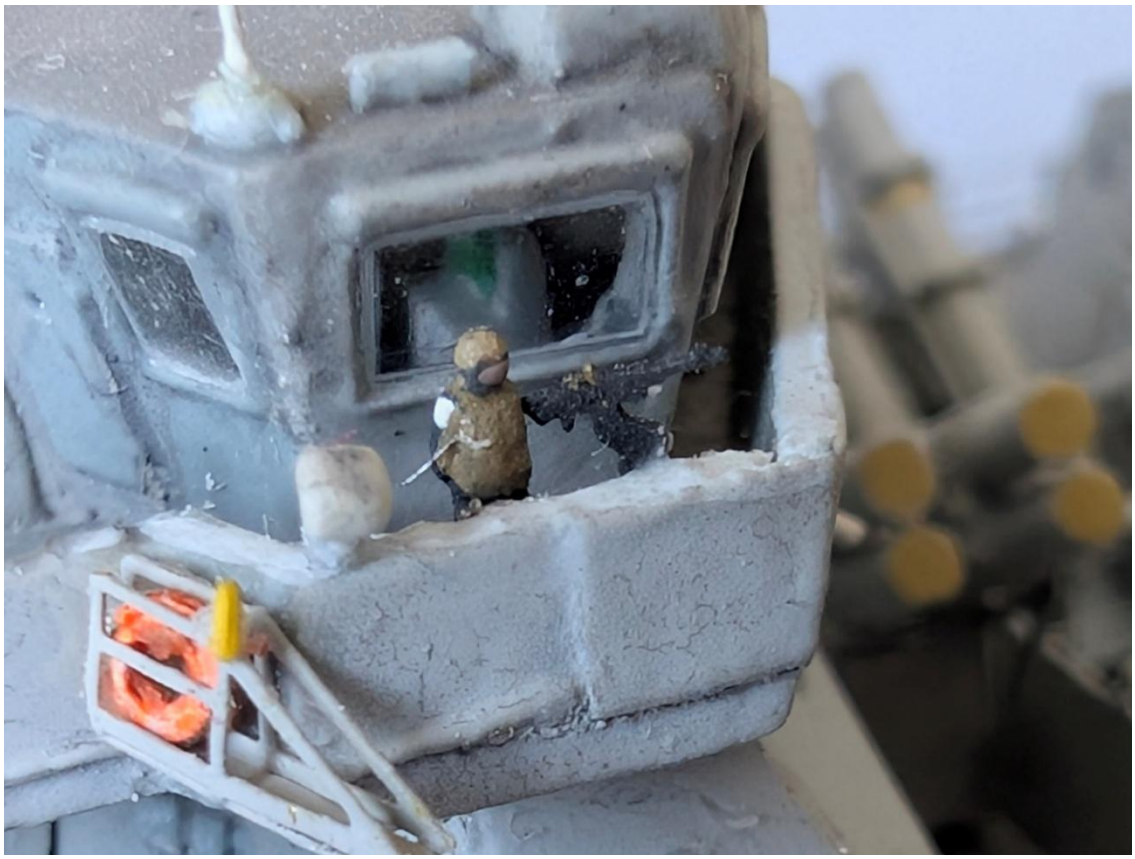
ROYAL NAVY

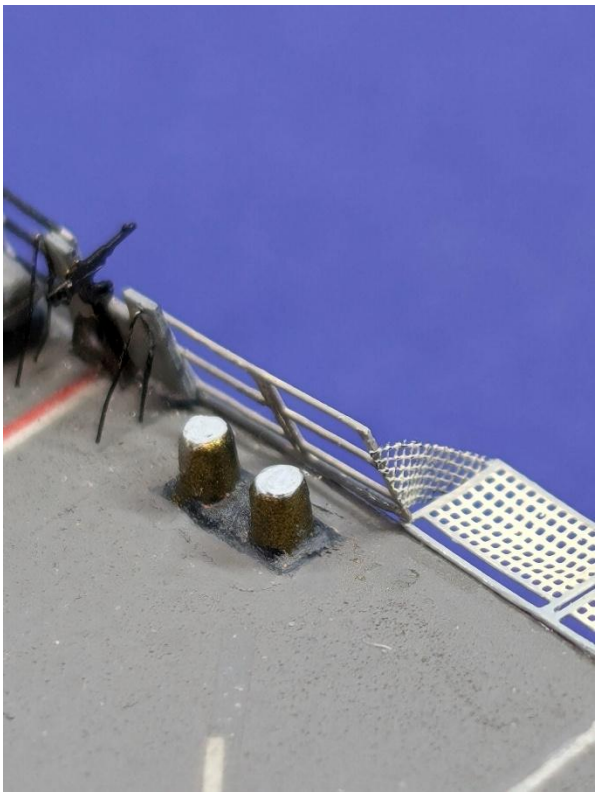
D 37

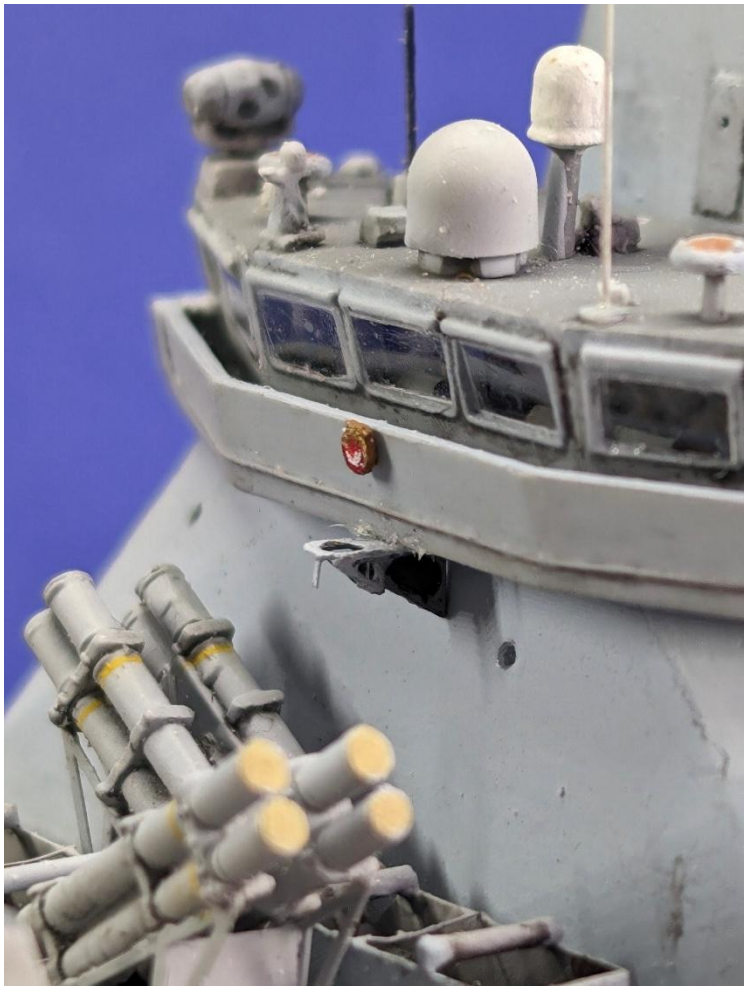
ROYAL NAVY

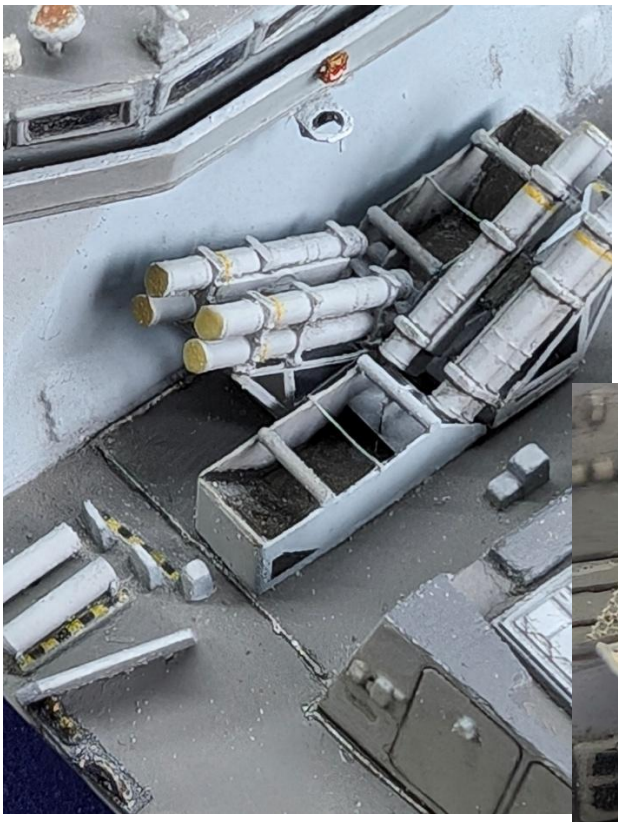


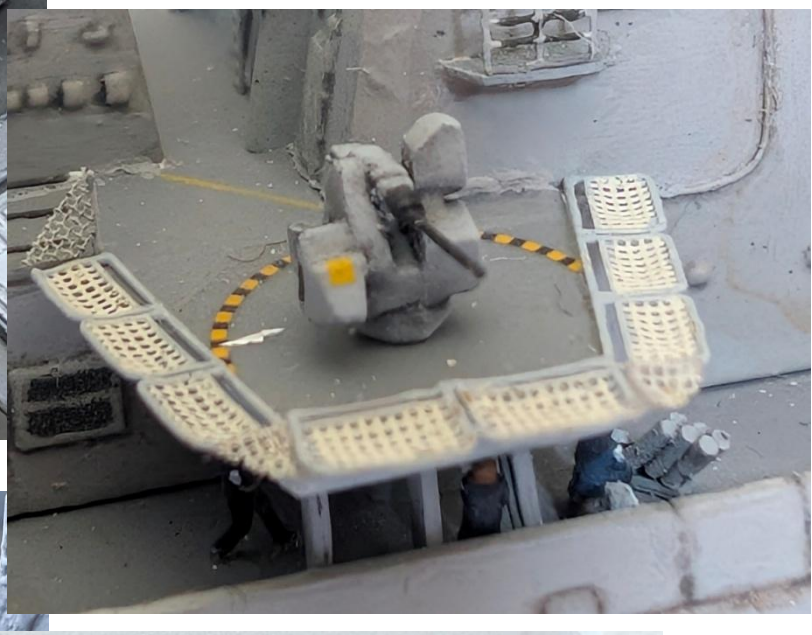


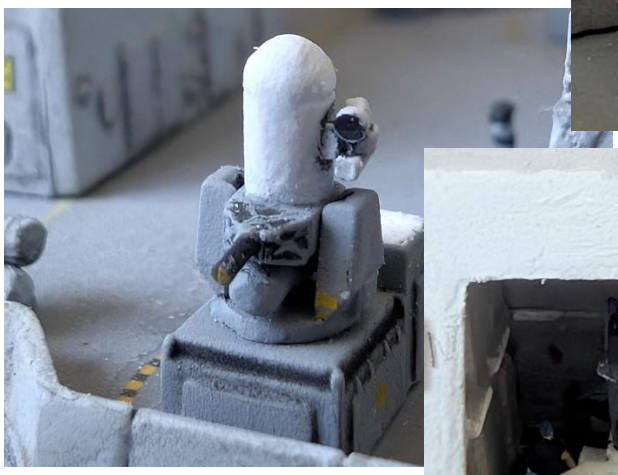


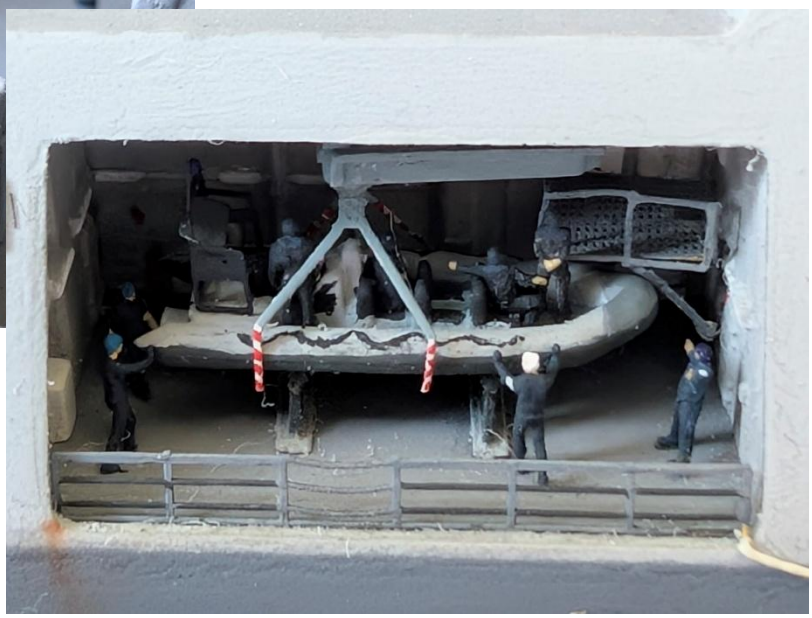


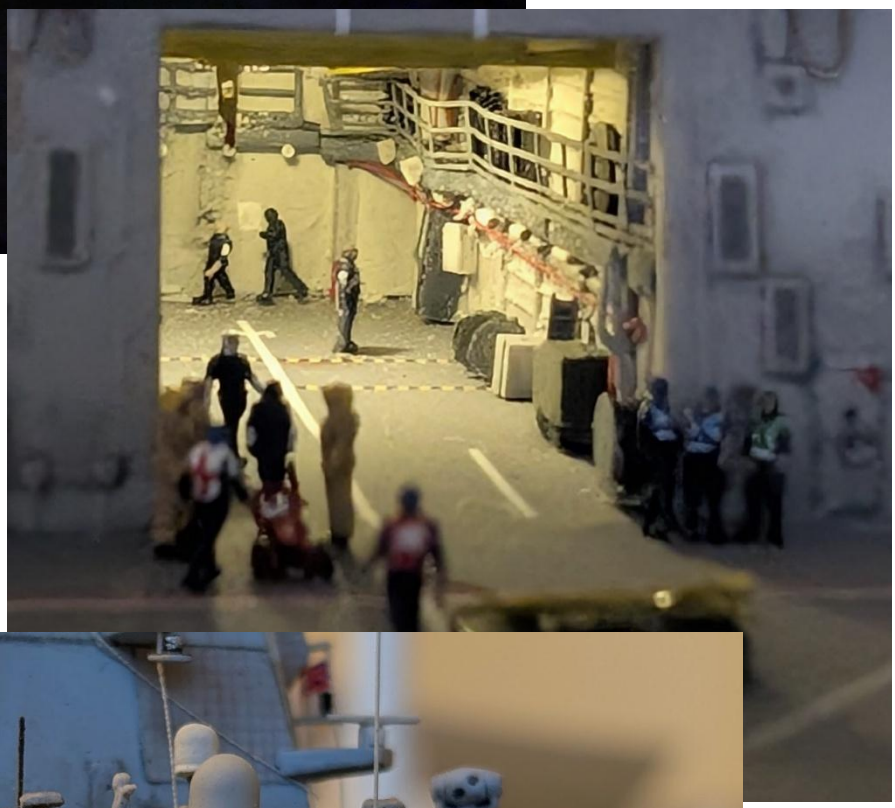


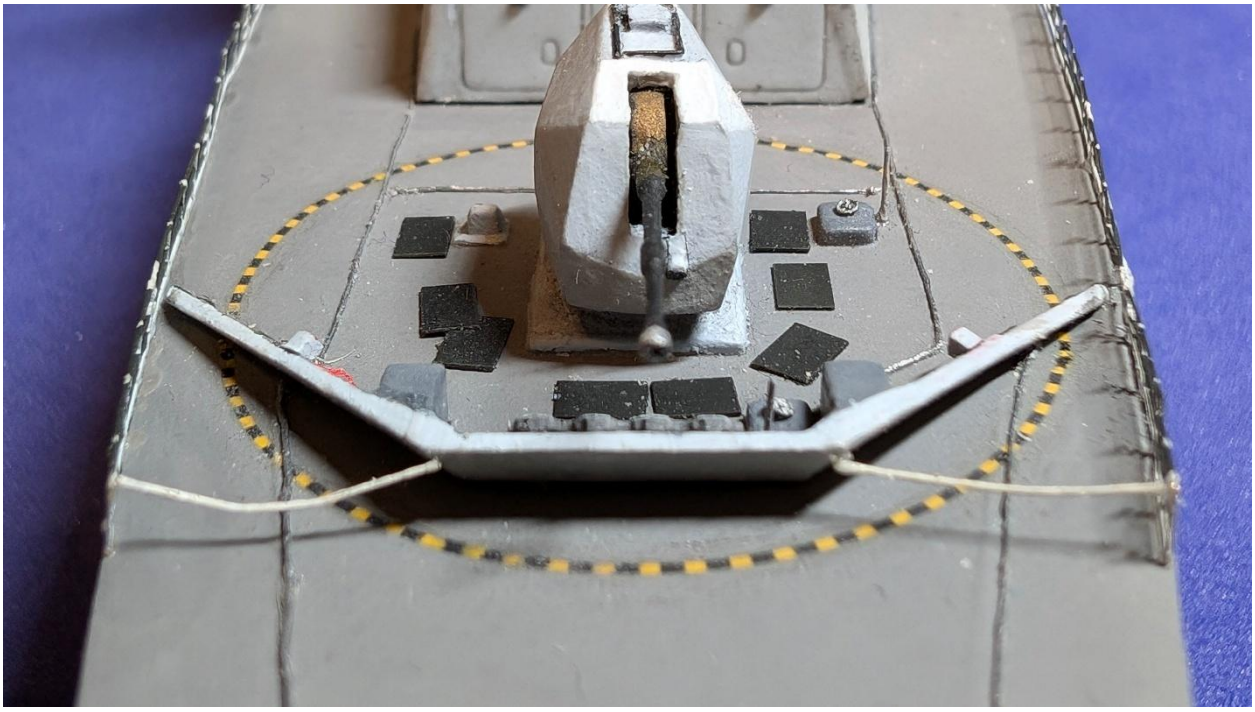


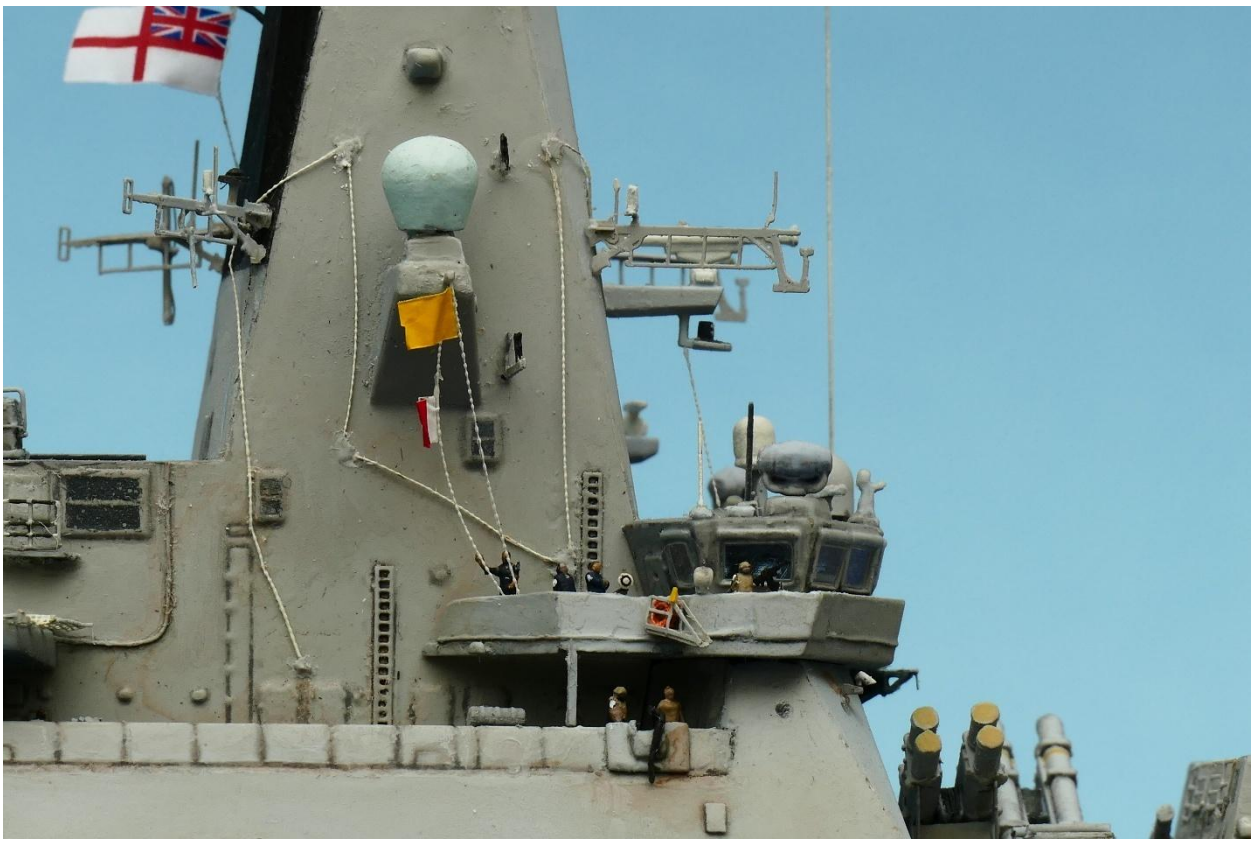












The end!